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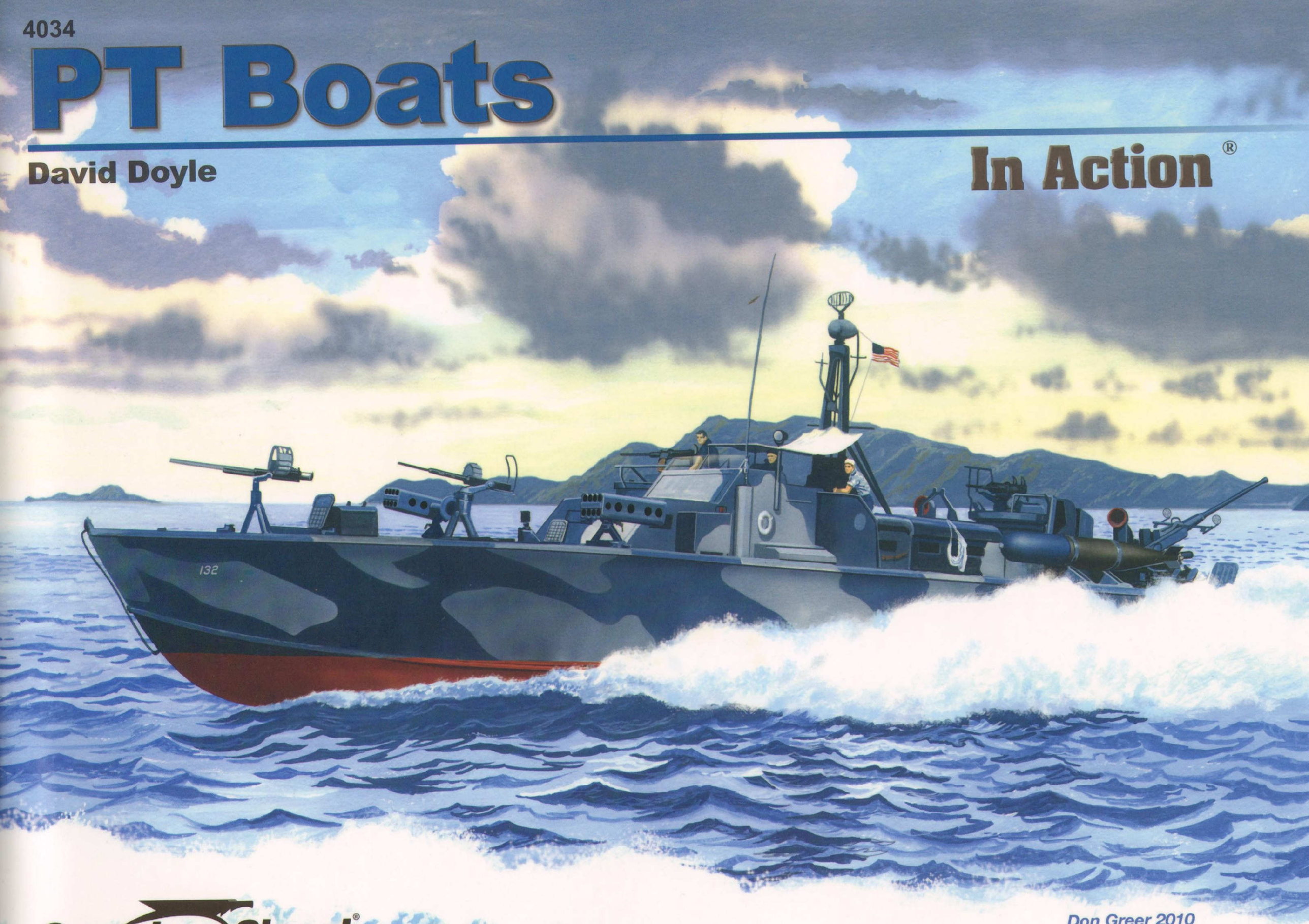
PT Boats

In Action®

David Doyle



Don Greer 2010

Squadron Signal® Publications

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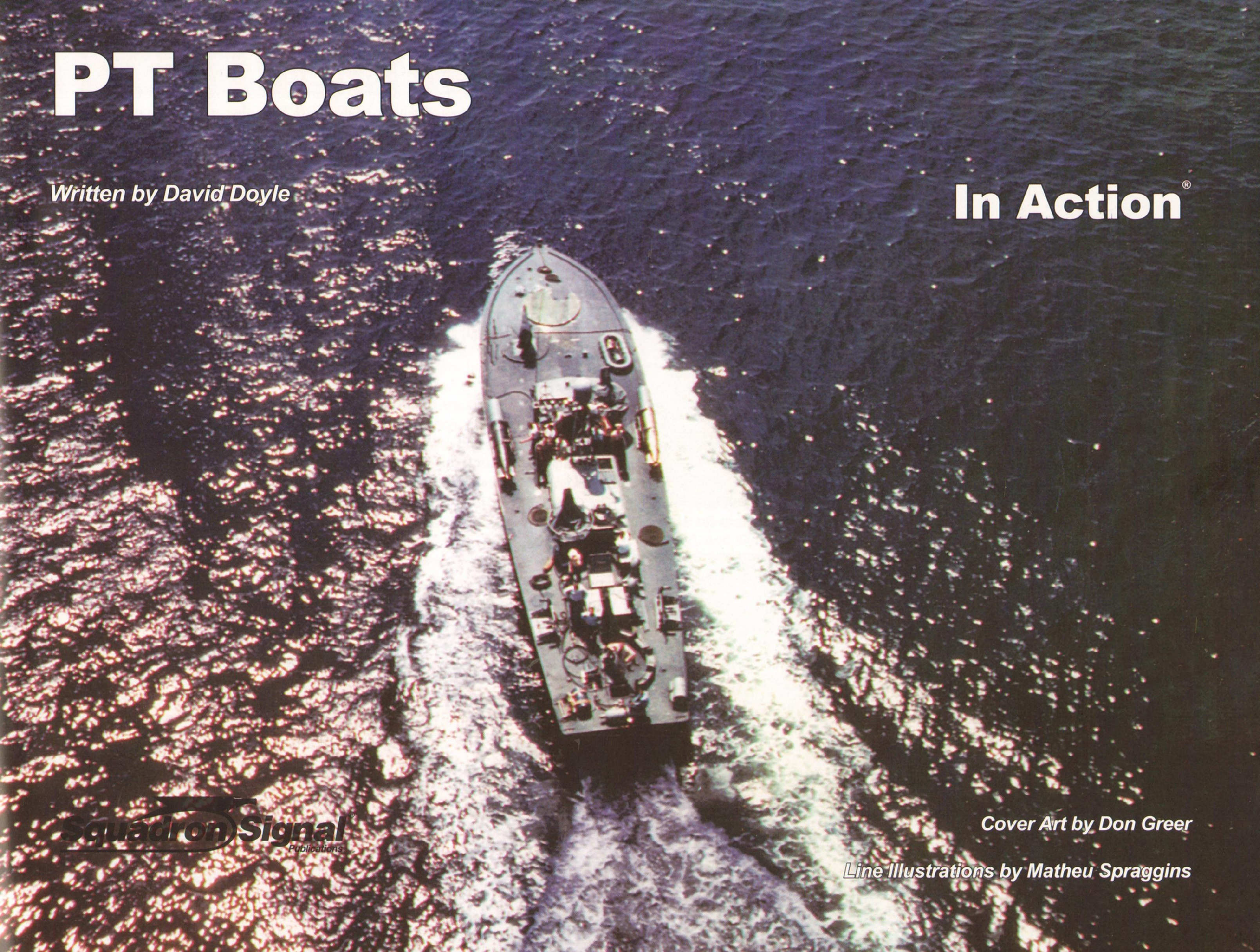

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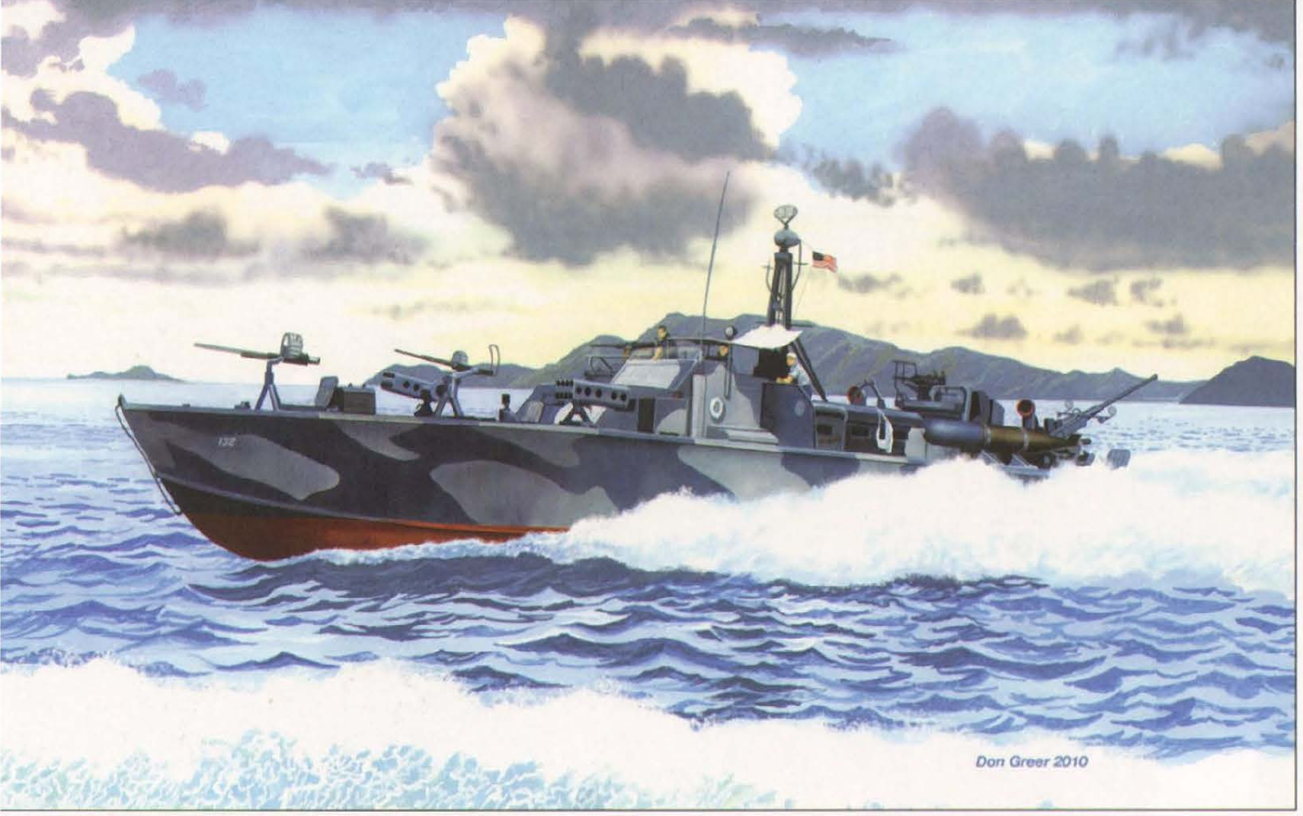

(Front Cover) Bristling with machine guns and loaded with torpedoes, rockets, 20mm and 40mm cannon, the PT boat and its crew made a formidable fighting machine. Not plywood, but of plank construction, and powered by a trio of Packard Marine engines, the lightweight, fast fighters proved invaluable at harassing the enemy.

(Back Cover) With top speeds in the 40 knot range, the PT boats, whether built by Higgins, Huckins, or as shown here, Elco, were the fastest warships in the U.S. fleet during WWII.

About the In Action® Series

In Action® books, despite the title of the genre, are books that trace the development of a single type of aircraft, armored vehicle, or ship from prototype to the final production variant. Experimental or "one-off" variants can also be included. Our first *In Action*® book was printed in 1971.

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(Title Page) Nimble PT boats were equally at home on the high seas, on rivers, and in coastal waters. In addition to their patrol and lifesaving services, they took on all sorts of enemy targets, from large warships to submarines, barges, and shore defenses.

Acknowledgments

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PT Boats, Inc. is a 501(c)(3) historical nonprofit organization set up in 1946 by WWII PT veterans to preserve the history of Patrol Torpedo Boats, their shore bases, tender ships, and the men who manned them. Embracing 7,000 PT veterans, PT Boats, Inc. maintains the PT Boat Museum and Library at Battleship Cove in Fall River, Massachusetts, and publishes a semiannual 50-page magazine. Supported by tax-deductible contributions, PT Boats, Inc. receives no government funds. Contact: PT Boats, Inc., P.O. Box 38070, Germantown, TN 38133-0070. (901) 755-8440. www.ptboats.org

Introduction

The American Patrol Torpedo, or PT, boat was conceived as a high-speed, nighttime raider in the 1930s. By 1939 the concept was becoming a reality, with experimental boats being built in a variety of designs, and by a variety of firms, as will be outlined in the following pages. Abroad, the British Admiralty had been developing similar craft with considerable success. With the unwritten encouragement of the Roosevelt administration, Henry Supthen, Vice-President of the Electric Launch Corporation (Elco), traveled to England and purchased on behalf of his firm a 70-foot torpedo boat of the latest type, designed by Hubert Scott-Paine. Not only did Supthen acquire one of the powerful new torpedo boats, he obtained a license to produce boats to the Scott-Paine design.

Built in England by Scott-Paine's British Power Boat Company, this Rolls-Royce Merlin-powered boat became PT-9 and was a pattern for Elco's PT-10 through 19 class. Elco's model, however, was powered by three purpose-built Packard marine engines.

Higgins Industries of New Orleans had built some of the early (pre-PT-9) experimental PT boats, albeit to the design of others. Andrew Jackson Higgins believed his firm could design and create a superior product – and succeeded in obtaining a series of contracts to produce Higgins-designed PT boats (the PT-71 class), boats notably different in styling from the Elco-built boats, although their performance was similar.

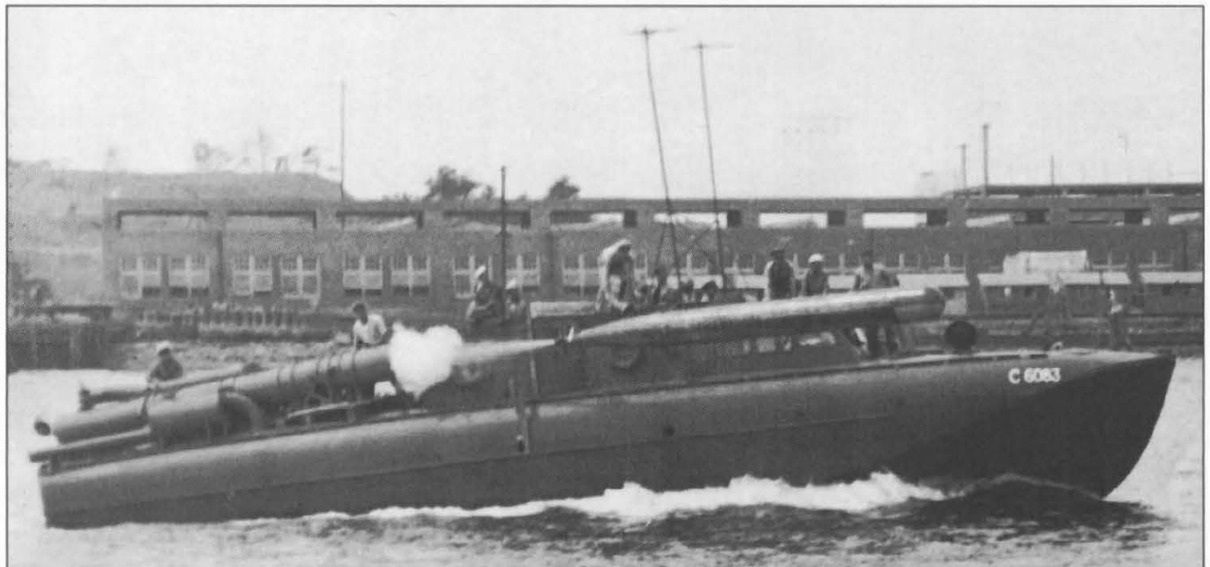
Jacksonville, Florida's Huckins Yacht Company, which still builds yachts, was the third main producer of U.S. Navy PT boats during WWII, making 18 PT-95 class boats.

The PT boats were organized and commissioned as squadrons rather than individual boats. The official designation, Motor Torpedo Boat Squadron, was informally abbreviated "RON." Between 1940 and VJ-day, a total of 45 RONs were commissioned, although RONS 41 and 42 were never deployed. RONs 43, 44, and 45 were decommissioned and transferred to the USSR under lend-lease.

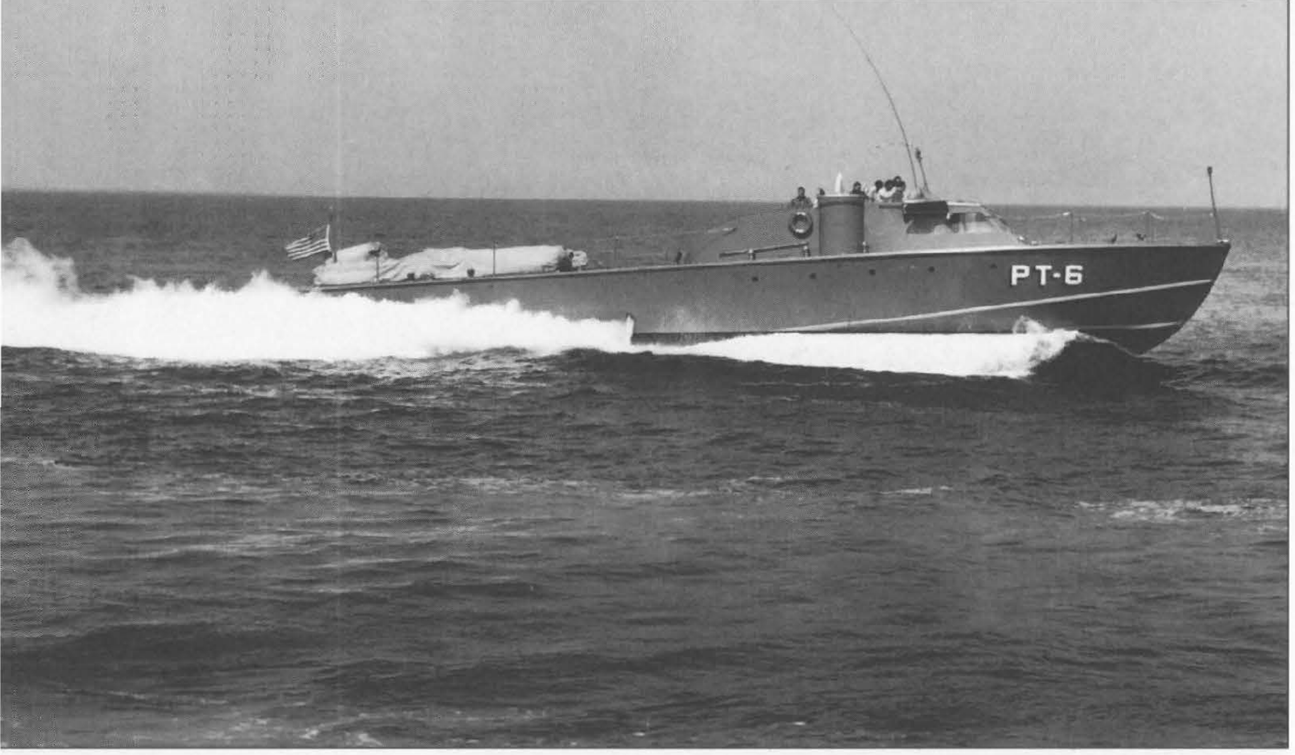
A squadron typically consisted of 12 to 16 boats, usually all of the same type, although some RONs were larger, and some contained a mix bag of boats.

PT-2 was also built by the Fogal Boat Yard (later renamed the Miami Shipbuilding Company), and like PT-1, its completion was delayed for almost two years because of the unavailability of the Vimalert 1,200-horsepower engines. On the after deck are the exhausts and mufflers.

Built by Fogal Boat Yard, Inc., of Miami, PT-1 fires a torpedo during tests. Next to the torpedo tube is one of two massive mufflers. Construction of the 58' boat began in July 1938 and was finished in November 1941. It was redesignated C-6083 the next month.



Constructed by the Fisher Boat Works of Detroit, PT-3 and PT-4 were 58' boats with rearward-firing torpedo tubes. Like PTs 1 and 2, they were based on the design of George Crouch. Ultimately, PTs 3 and 4 were transferred to the Royal Navy, where they served as MTBs 273 and 274.

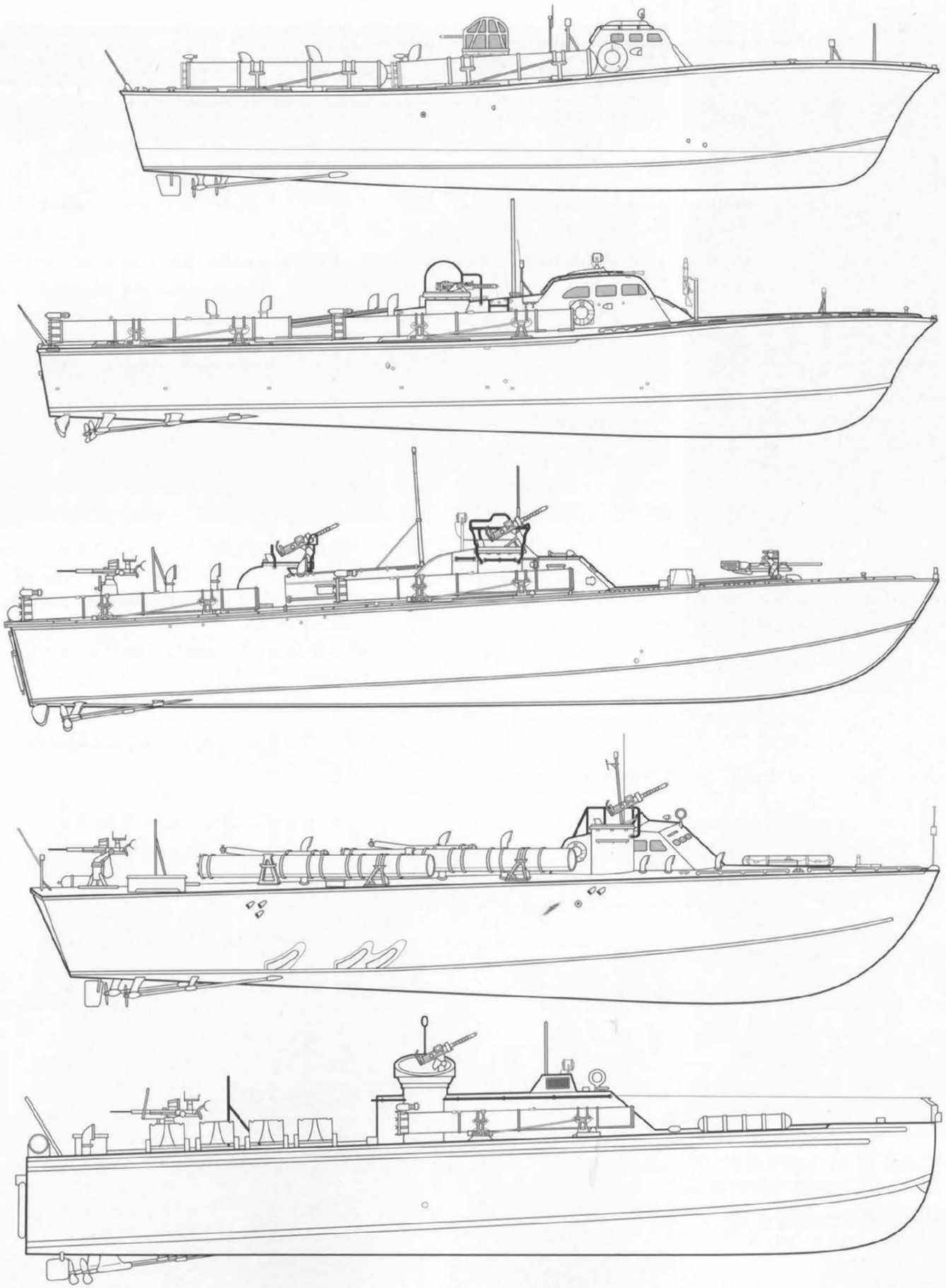


Higgins Industries, Inc., of New Orleans built two 81' boats designated PT-6, based on the naval architects Sparkman & Stephens' design. PT-6(1), completed in August 1940, was sold to Finland that year. PT-6(2), based on Higgins' own design, was completed in February 1941 and is shown in this photo.

In the winter of 1940-41, PT-6(2) was delivered to Squadron 1 in Florida, where it was photographed with two Elco 70-footers, PTs 18 and 19, assigned to PT Squadron (Ron) 2. Both squadrons were preparing for a shakedown cruise to the Caribbean, but only Squadron 2 made the trip.

PT-8 was built by the Philadelphia Navy Yard and was of all-aluminum construction. It and its sister boat, the wooden-hulled PT-7, were 81-footers. Although PT-7 was transferred to Great Britain in 1941, PT-8 remained in USN service under the redesignation YP-110 until after the war.

In March 1939, Elco purchased for $300,000 the British Scott-Paine 70-foot PV-70, a one-off prototype for a motor torpedo boat. Elco used the boat as the basis for the design of its PT-10–19 class. Here the unmarked PT-9 test fires a torpedo during U.S. Navy trials in April 1939.



Elco PT-10

Length	70 feet
Beam	19' 11"
Displacement	33 tons
Powerplant	3 x Packard
Speed	39 knots
Range	550 miles

Elco PT-20

Length	77 feet
Beam	19' 11"
Displacement	33 tons
Powerplant	3 x Packard
Speed	39 knots
Range	550 miles

Elco PT-103

Length	80 feet
Beam	23 feet
Displacement	38 tons
Powerplant	3 x Packard
Speed	40 knots
Range	550 miles

Higgins PT-71

Length	78 feet
Beam	19' 5"
Displacement	43 tons
Powerplant	3 x Packard
Speed	41 knots
Range	550 miles

Huckins PT-98

Length	78 feet
Beam	19' 5"
Displacement	34 tons
Powerplant	3 x Packard
Speed	41 knots
Range	716 miles

The lead boat in the first production class of U.S. PT boats class, PT-10, sails past Manhattan. Production of the 70' PT-10-19 class began at the Elco works in Bayonne, New Jersey, in January 1940 and its combination of wooden construction and trio of Packard Marine V-12 engines set the pattern for all subsequent production Elco boats.

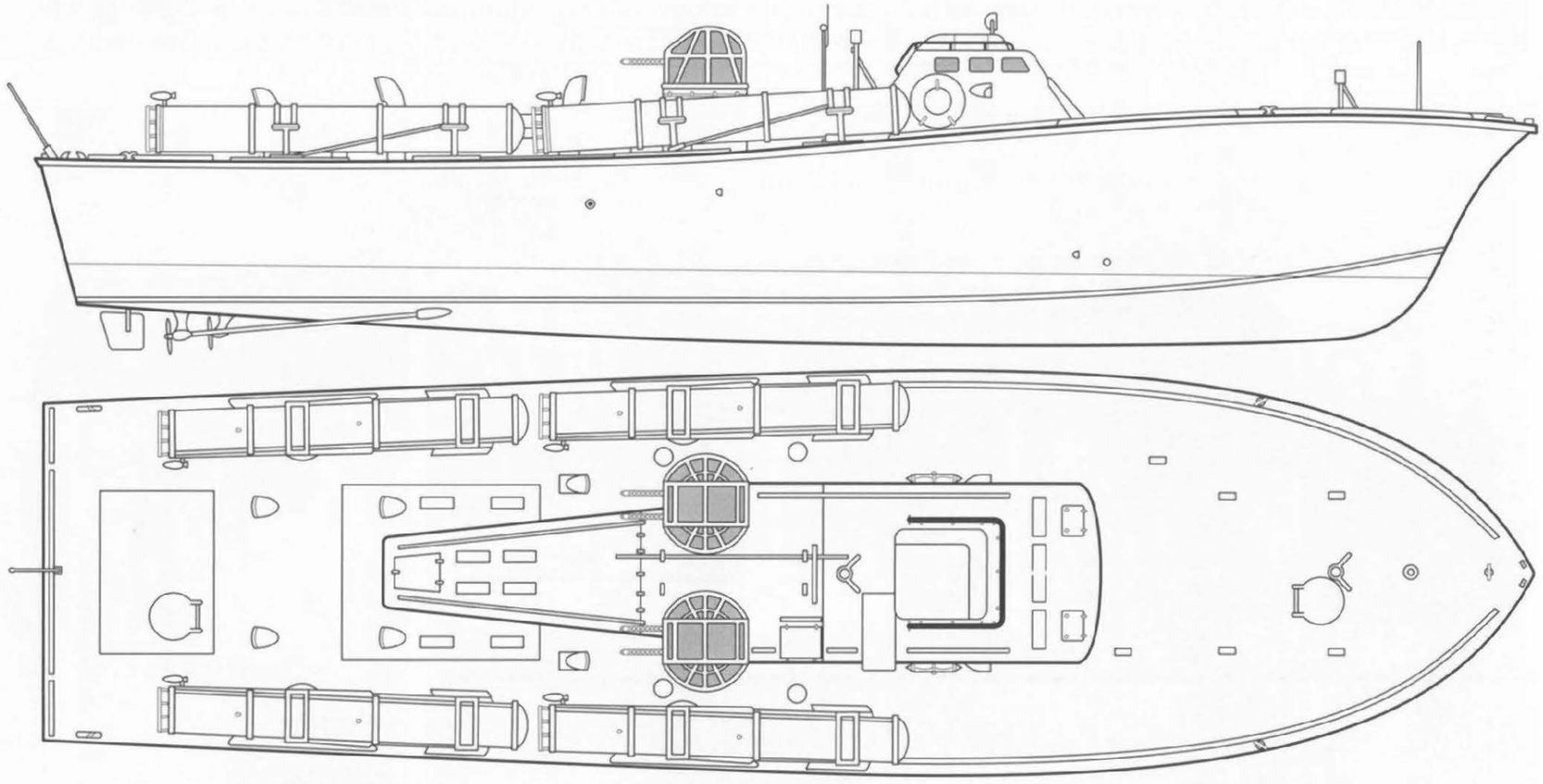
Elco 70-foot PT boats

Beginning in January 1940, the Naval Division of Elco (formally, the Electric Boat Company) at Bayonne, New Jersey, began manufacturing the first production class of U.S. PT boats: the PT-10-19 class of 70-foot boats. The PT-10-19 class featured a hull similar to that of PT-9, but the cabin (or canopy) was redesigned. The pilot house was also larger than that of the PT-9. The boat's keel was hand-hewn Alaskan Spruce, and the stem American Oak. The frames, as well as the hull planking, were African Mahogany. The hull and deck were constructed of double layers of planking laid diagonally, with airplane fabric impregnated with marine glue sandwiched between the layers for extra strength and watertightness. In addition to four 18-inch torpedo tubes, the boats were armed with two Dutch-made Dewandre hydraulically powered twin-.50-caliber machine gun turrets with Plexiglas canopies. Three Packard 4M-2500 1,200-horsepower V-12 engines powered the boat, which was capable of speeds up to 39 knots. The center engine was direct drive, whereas each side engine drove its propeller through a V-drive. At top speed, each engine consumed about 150 gallons of 100-Octane gasoline per hour.

The 10 boats of this class saw combat, but not under the American flag. Turned over to Great Britain under Lend-Lease, they became the 10th Motor Torpedo Boat Flotilla. The vessels were renumbered MTB 259 through 268, and served in the Mediterranean. A number of modifications were made to the boats to render them suitable for service in the Royal Navy.

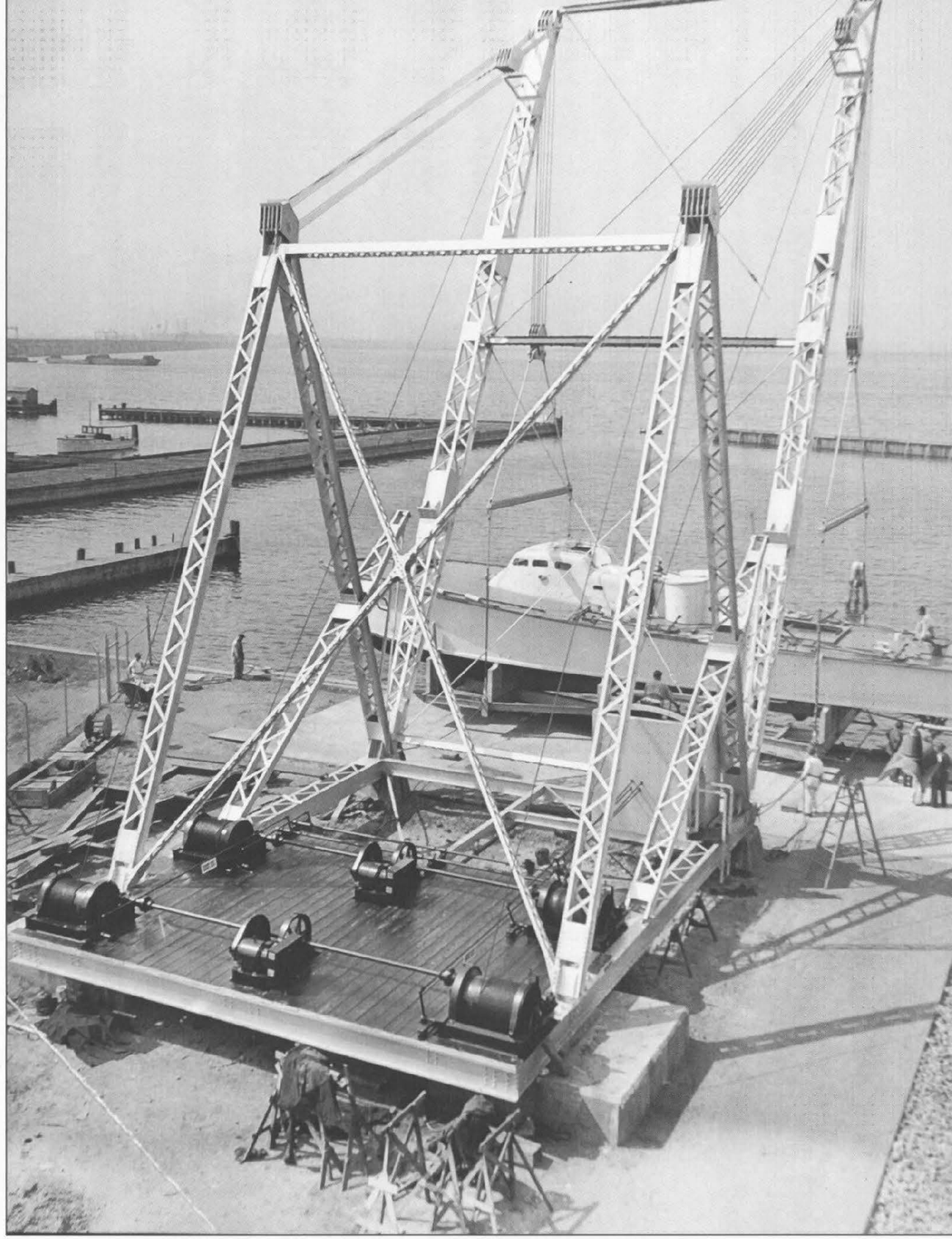
Specifications

Length	70 feet (21.3 m)
Beam	19 feet 11 inches (6 m)
Displacement	33 tons (29,937 kg)
Powerplant	Three 1,200 hp Packard liquid-cooled engines
Armament	Two twin .50 caliber Dewandre machine gun turrets and four MK VII torpedoes. Provision for two Lewis machine guns mounted on either side of the pilot house.
Speed	39 knots
Range	550 miles
Crew	17

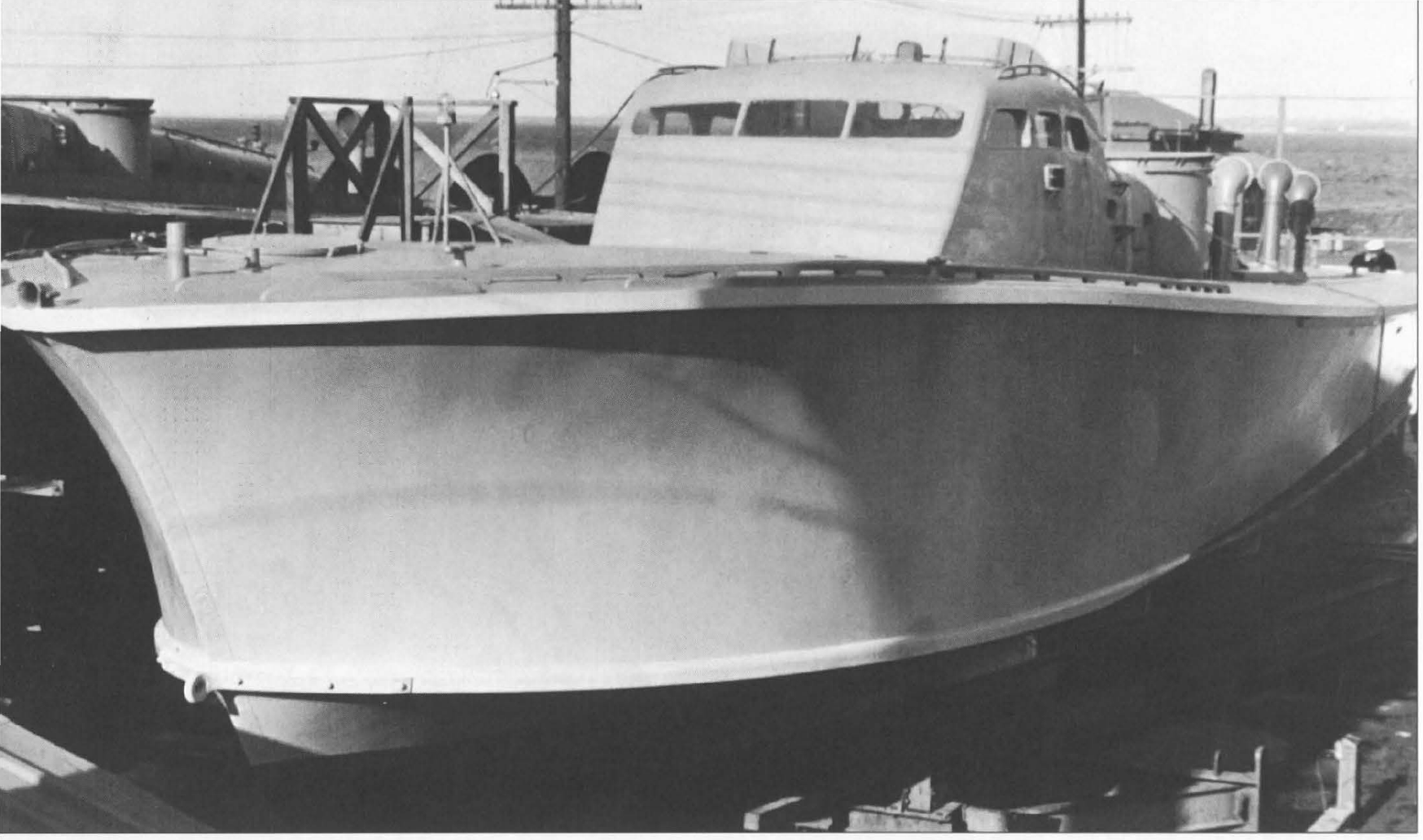


A PT-10-19 class boat speeds across the water, its torpedo tubes protected by waterproof covers. Visible are the open bridge above the chart house, the elongated cabin, and the six cowl vents on the mid and aft sections of the deck.

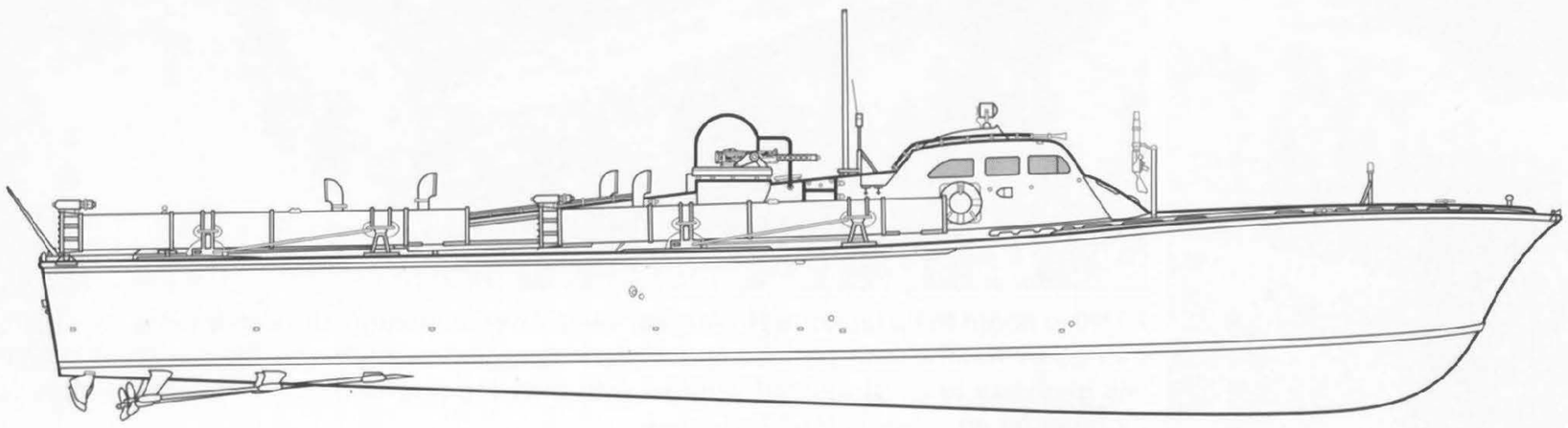
Secretary of the Navy Frank Knox visits PT-10 at the Brooklyn Navy Yard in 1940. The officer standing on the main deck is next to the open hatch into the cabin, and to the front of the hatch are built-in steps up to the bridge.



PT-10 is about to be launched in August 1940. After launching, the armaments, aft cabin, and other fixtures will be installed. The rectangular rear window on the chart house will give way to an elongated window with tapering rear end when the chart house is lengthened on the later PT-20-68 class.



The Elco 77' PT boat was introduced in 1940, when Elco won a contract to construct 24 77' PT boats, numbered 21 to 44. At the same time, a previously issued contract was modified so that PT-20 would be completed as a 77', rather than 70', boat. Commensurate with their 7' longer hulls than the preceding PT-10 class, these boats had longer trunk cabins and chart houses, with some changes in the shapes and features of these structures. The Dewandre turrets were replaced by hydraulically powered, Plexiglas-covered turrets of Elco's own design. Four Mk. 18-1 torpedo tubes for Mk. 8-3C and -3D 21" torpedoes were mounted on the sides. Type C depth charge racks could also be mounted. Three Packard 4M-2500 1,200-horsepower V-12 supercharged engines provided power. The first boats in this class, such as this one, lacked torpedo tubes because of material shortages. Because of the success of the Elco 77' boats in the 1941 Navy competitions called the "Plywood Derby," the Navy ordered 24 more of these boats. The 49 boats were designated the PT-20-68 class.



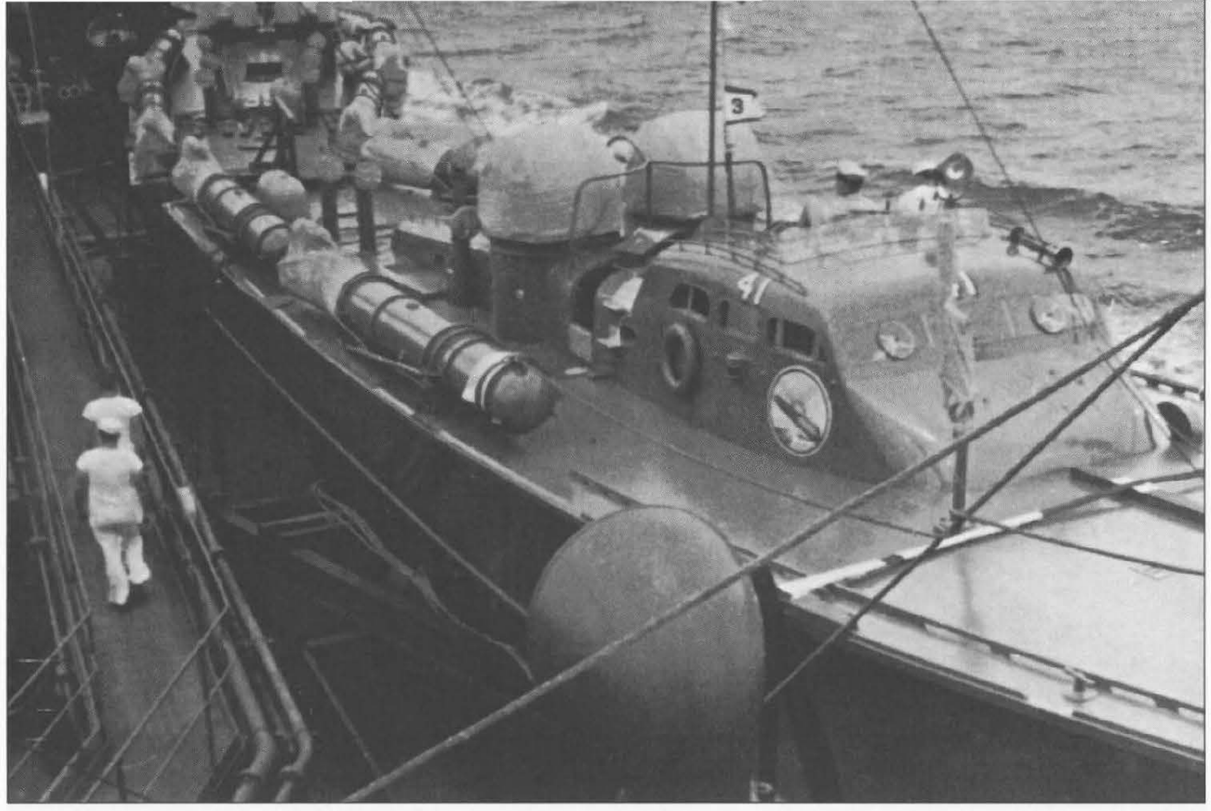
Elco 77-foot PT boats

The 49 77-foot boats of the PT-20-68 class were the first PT boats to see combat under the American flag. Their design was lengthened in response to the need to mount four 21-inch torpedo tubes of U.S. design, something the earlier 70-foot boats could not readily accommodate. The first boats in this class delivered to the U.S. Navy, including the one shown here, lacked torpedo tubes because of material shortages.

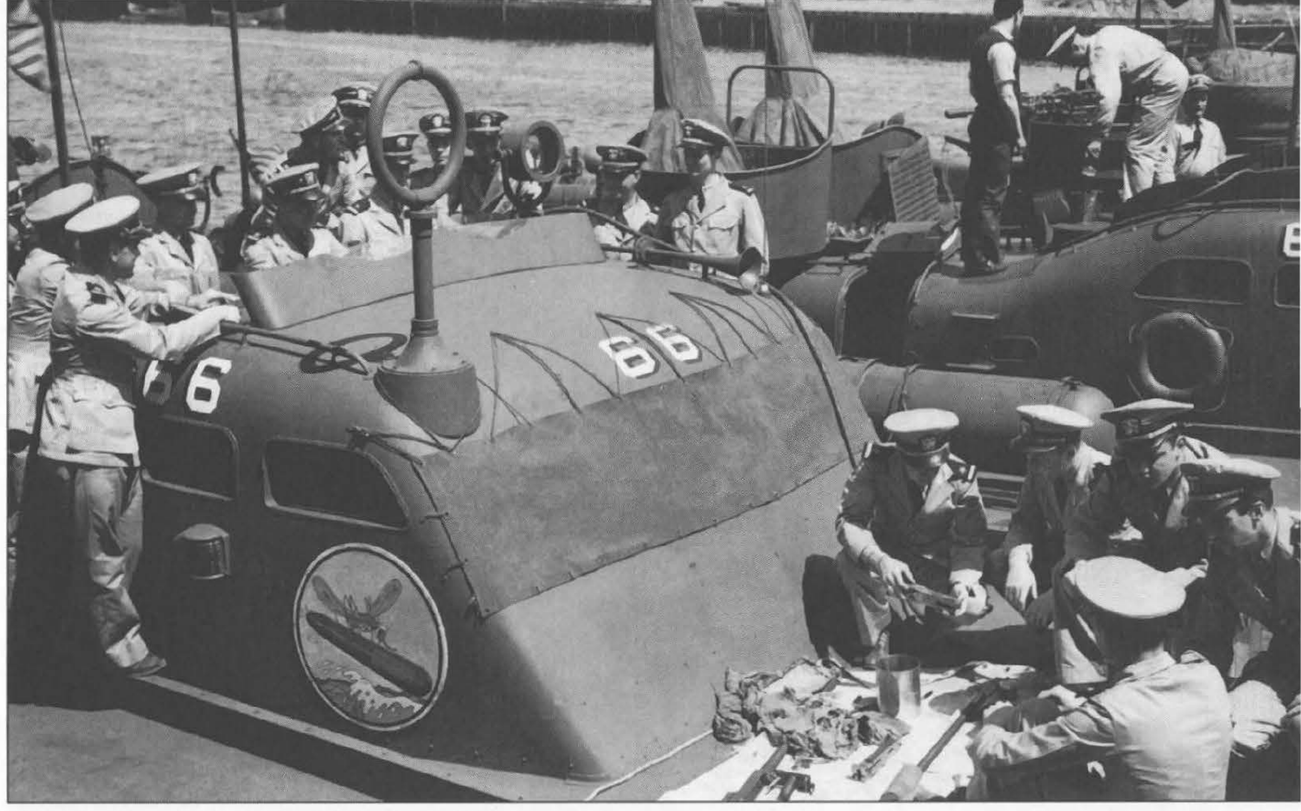
On the morning of 7 December 1941, boats PT-20 through 25, assigned to RON 1, were tied up at the U.S. submarine base at Pearl Harbor. From there, two of PT-23's gunners claimed two Japanese aircraft downed. Across the base, six more of RON 1's boats were in the process of being transferred to RON 3, and were being loaded for transit to the Philippines. Although surviving the attack, their transfer was cancelled and they were instead based at Pearl. Four of RON 3's six boats (PT 32, 34, 35, and 41) would rise to great fame for evacuating General Douglas MacArthur from Corregidor in the Philippines and were immortalized in the 1945 movie "They Were Expendable."

Specifications

Length	77 feet (23.5 m)
Beam	19 feet 11 inches (6 m)
Displacement	33 tons (29,937 kg)
Powerplant	Three 1,200 hp Packard liquid-cooled engines
Armament	Two twin .50 caliber Elco machine gun turrets and four MK VII torpedoes. Provision for two Lewis machine guns mounted on either side of the pilot house.
Speed	39 knots
Range	550 miles
Crew	17

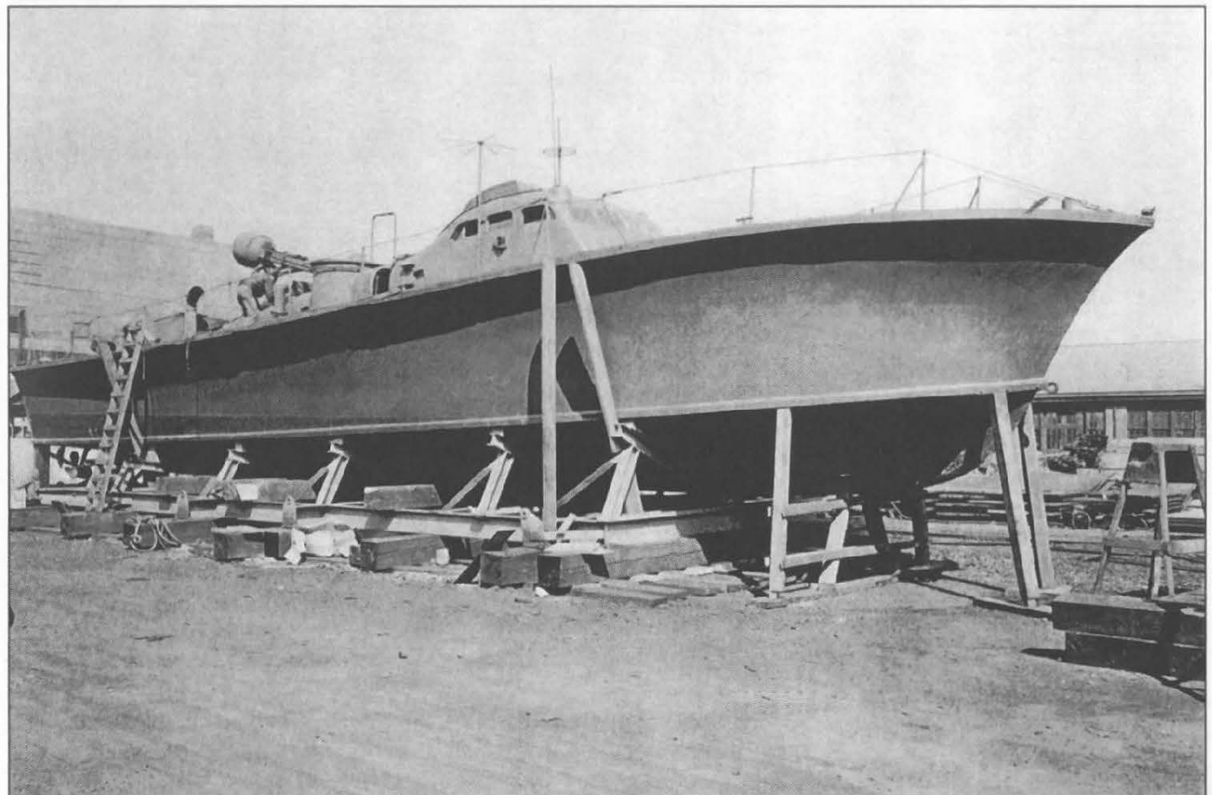


PT-41, the Elco 77-foot boat of Lt. Robert J. Bulkley, Jr., commanding officer of Squadron 3, was photographed stowed on a tanker *en route* to the Philippines in the summer of 1941. This boat and its commander gained fame for evacuating Gen. Douglas MacArthur and his family from Corregidor to Mindanao in March 1942.

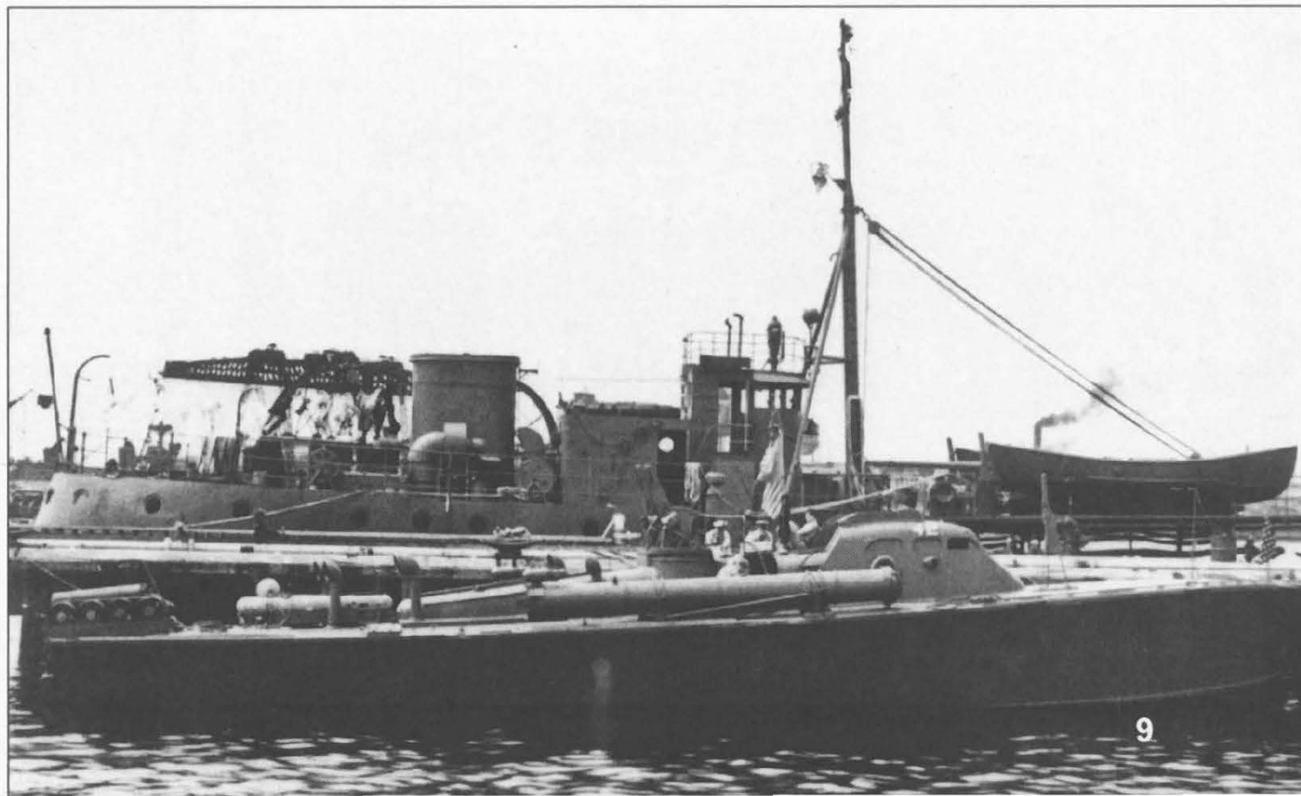


In the spring of 1942, PTs 66 and 62 were assigned to Squadron 4, the PT boat training unit at the Motor Torpedo Boat Squadron Training Center at Melville, Rhode Island. The direction-finder antenna is prominent atop the chart house. The officers to the right are inspecting a disassembled .50-caliber machine gun.

Following the loss of PT-109, Lt. (j.g.) John F. Kennedy took command of the PT-59 at Tulagi in the Solomon Islands, in September 1943. PT-59 had served with Squadrons 4 and 2. Subsequently converted to a gunboat and later reclassified as a small boat, it had a collapsible radar mast when photographed in March 1945.



On 22 July 1941, PT-42 was commissioned into Motor Torpedo Boat Squadron 2. Then, on 12 August that year, it was transferred to Squadron 1. PT-42 was photographed at the fueling dock at Pearl Harbor in April 1942. The roll-off rack on the stern holds four depth charges.



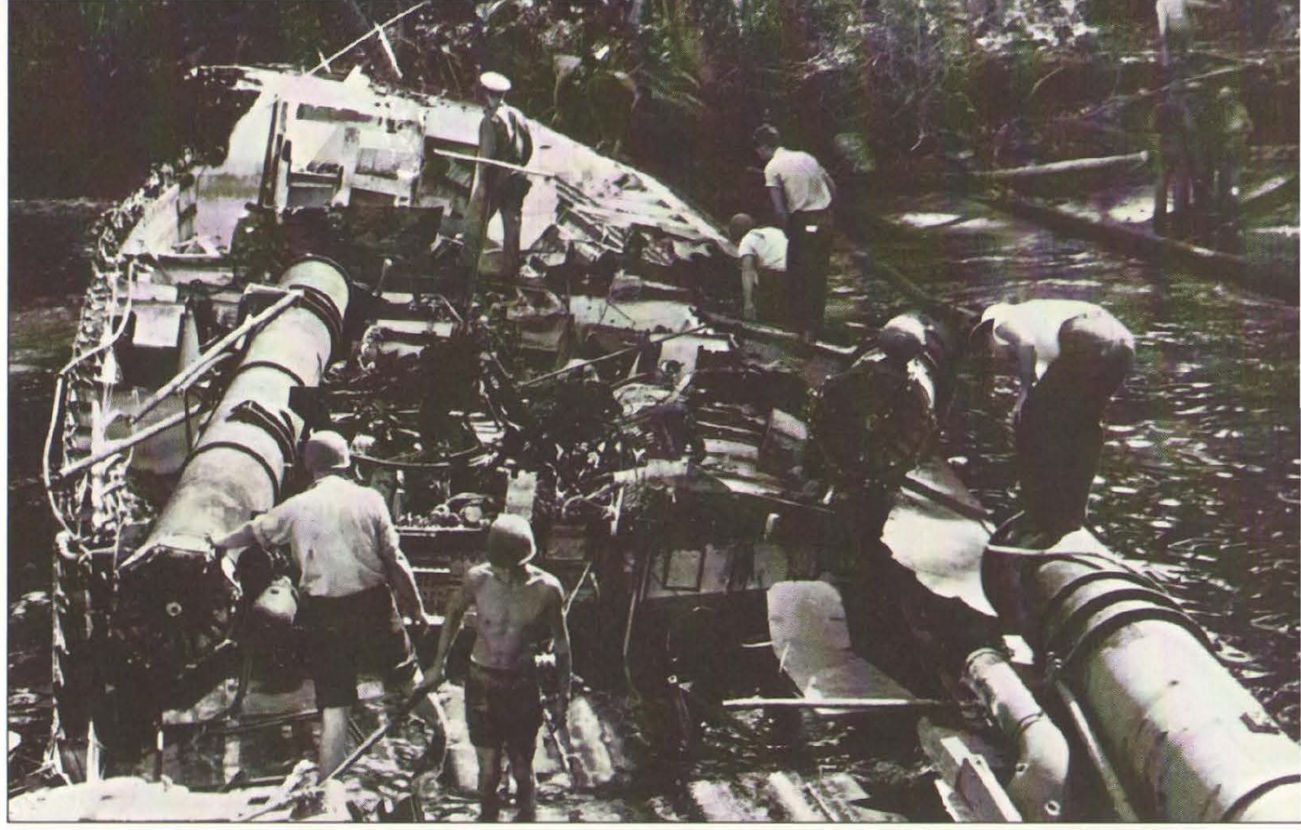
PT boats from Motor Torpedo Squadron 8 were based on the Morobe River in New Guinea in late 1943. In the foreground is the aft section of a late-model PT-20-68 class boat with a 20mm gun; the deck stiffeners were added late in the production run. There are various mixed arrangements of torpedo tubes and depth charges visible on the boats.

Looking aft from the open bridge, gunners man the unloaded .50-caliber guns on an Elco 77-foot PT boat during a training exercise. Based on combat reports from Pearl Harbor and the Philippines of the Plexiglas canopies fogging and the hydraulic-powered gun mounts malfunctioning, open turrets with manual gun mounts were introduced starting with PT-45.

A truck belonging to Traynor & Hansen tows a lowboy trailer holding PT-39 in New York City for a war bonds parade and rally. The boat had served with Squadrons 2 and 3(2) in the Pacific and had been refitted with Mk. 13 torpedoes in drop racks.

Skippered by Lt. (j.g.) Robert F. Lynch, the camouflage-painted PT-68 served with Motor Torpedo Boat Squadron 8 in New Guinea waters in 1943. On 3 October 1943, PT-68 ran aground, and an accompanying PT boat destroyed it after all hands had been saved.

Lt. Charles E. Tilden was in command when the PT-43 met its end off Guadalcanal shortly after midnight on 11 January 1943. The vessel was hunting the nighttime "Tokyo Express" supply convoys in Iron Bottom Sound when a Japanese destroyer zeroed-in on the PT-43's torpedo flashes and blasted the boat. Three crewmen were lost as PT-43's hands abandoned ship in the darkness. By morning the boat had drifted aground behind the Japanese lines on Guadalcanal.



A New Zealand Navy corvette observed the damaged PT-43 beached on Cape Esperance, and destroyed the boat by gunfire to keep it from falling into enemy hands. Here, a U.S. Navy team inspects the wreckage of the PT-43 in the aftermath of both the Japanese attack and subsequent destructive Allied gunfire. The boat's main deck and upper part of the gunwales have been destroyed and little is recognizable, save the torpedo tubes, two of which have been wrenched from their mountings.

PT-66, a 77-foot Elco Patrol Torpedo (PT) boat, was camouflaged for operations off New Guinea during early 1943. It was assigned to Torpedo Squadron Eight.

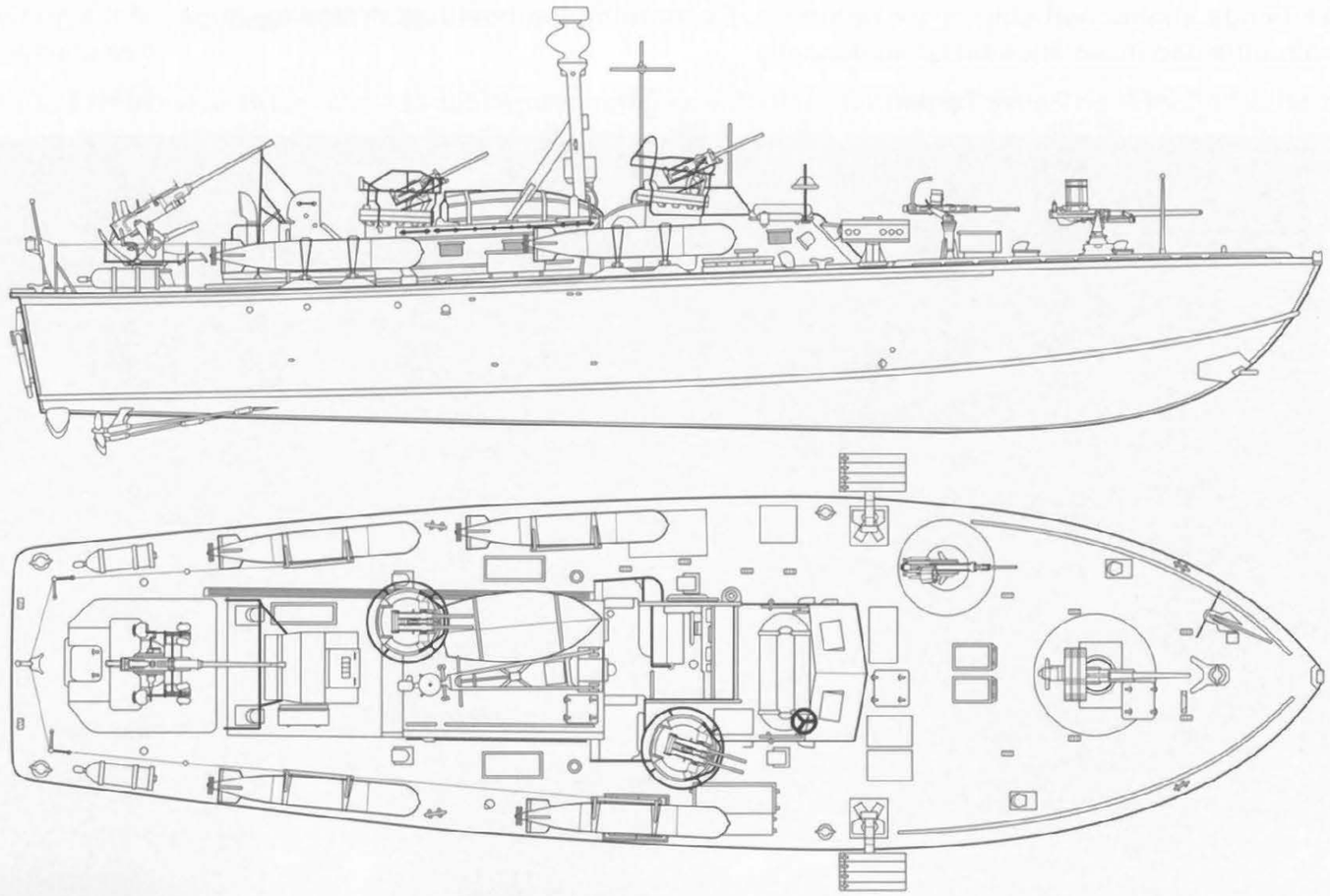
For many, the 80' Elco PT boat is the quintessential American PT boat. Learning from the lessons of the earlier craft, the Navy and Elco created a rugged, nimble vessels large enough to carry formidable armament. The first boat in the series is shown during performance trials. The two men on the roof of the day cabin are holding up a sign announcing that this is "Run # 24."

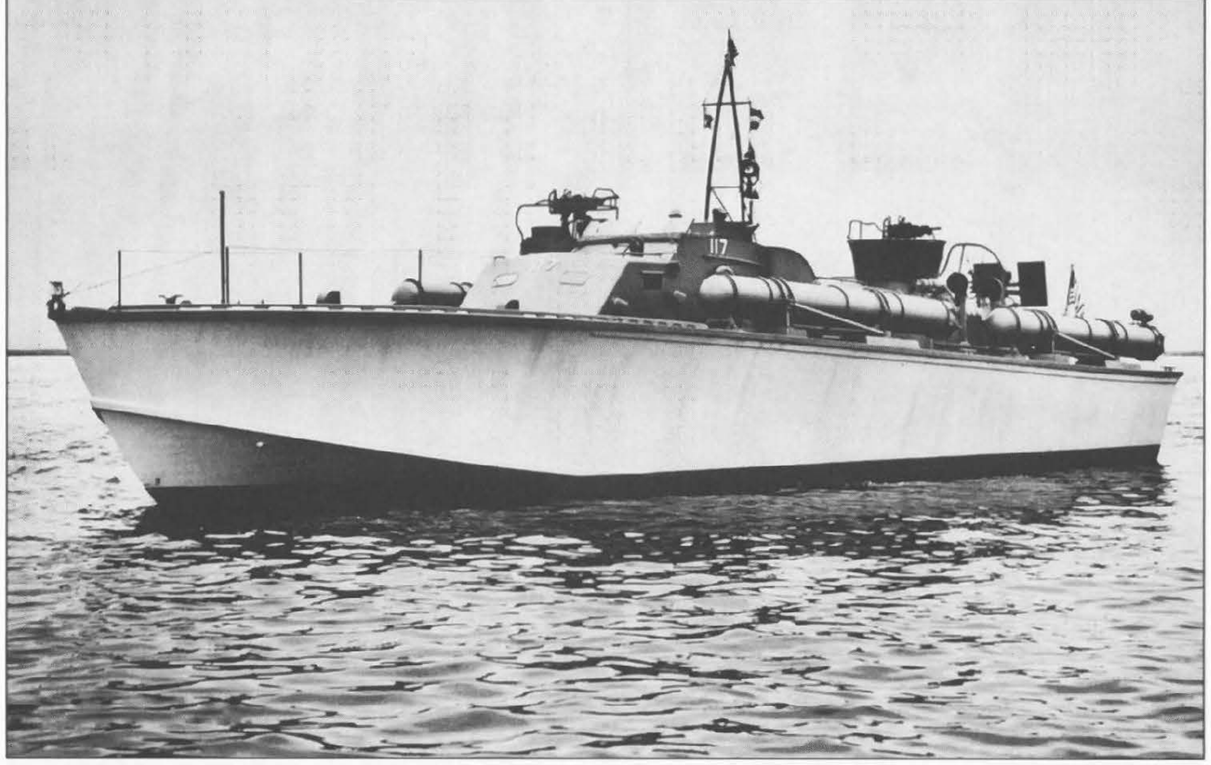
Specifications

Length	80 feet
Beam	23 feet
Displacement	51 tons - later 61 tons
Powerplant	Three 1,200 hp Packard liquid-cooled engines
Armament	(initial) Two twin .50 caliber machine gun turrets, four torpedoes and a 20mm Oerlikon cannon. (late) Two twin .50 caliber machine gun turrets, four torpedoes, a 20mm Oerlikon cannon, a 40mm Bofors, a 37mm Oldsmobile and two MK 50 eight-tube rocket launchers.
Speed	40-43 knots
Range	550 miles
Crew	17

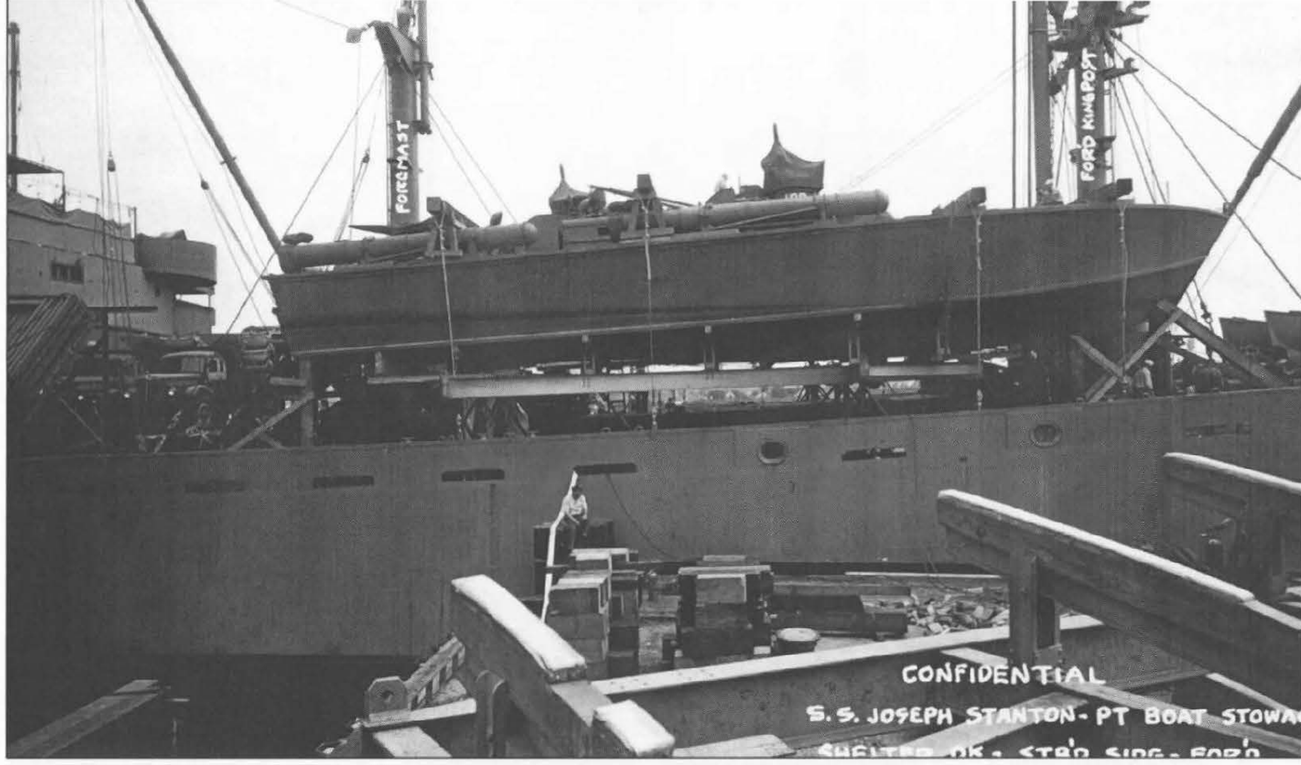
Elco 80-foot PT boats

With the launching of PT-103 on 16 May 1942, Elco unveiled its new class of 80-foot boats, which would become the premier patrol-torpedo boat of the Pacific Theater. With its nearly flat foredeck, staggered turrets, and angular chart house, it bore little resemblance to its Elco 70-foot and 77-foot predecessors. However, it retained the same types of main engines and torpedo tubes as the Elco PT-20-68 class. Weighing five tons more than the 77-foot Elcos, the 80-footers were slightly slower and less maneuverable but exhibited better sea-keeping characteristics. Initial armament consisted of four torpedo tubes, depth charges, .50-caliber machine guns, and a single, aft-mounted 20mm Oerlikon cannon. The design was not fixed, however. Smoke generators were added on the after deck by PT-115. In 1943 the spray shields around the engine room hatch were deleted, and the hatch redesigned to double as an air intake. Beginning with PT-325 the seven-inch topside of the aft cabin, as well as two of the engine room cowl ventilators were eliminated. Radar equipment began to be installed in 1943, along with more and larger weapons, making the boats more effective as nighttime barge busters. Also in 1943, the power of the Packard engines was raised from 1,200 to 1,350 horsepower, increasing the top speed of the boats to 43 knots. In 1944 the torpedo tubes were replaced with roll-off racks, and a 40mm cannon added at the stern. Engine horsepower further increased to 1,500 to cope with the added weight. Rocket launchers were added, and in 1945 a 37mm automatic gun began to be fitted as well.



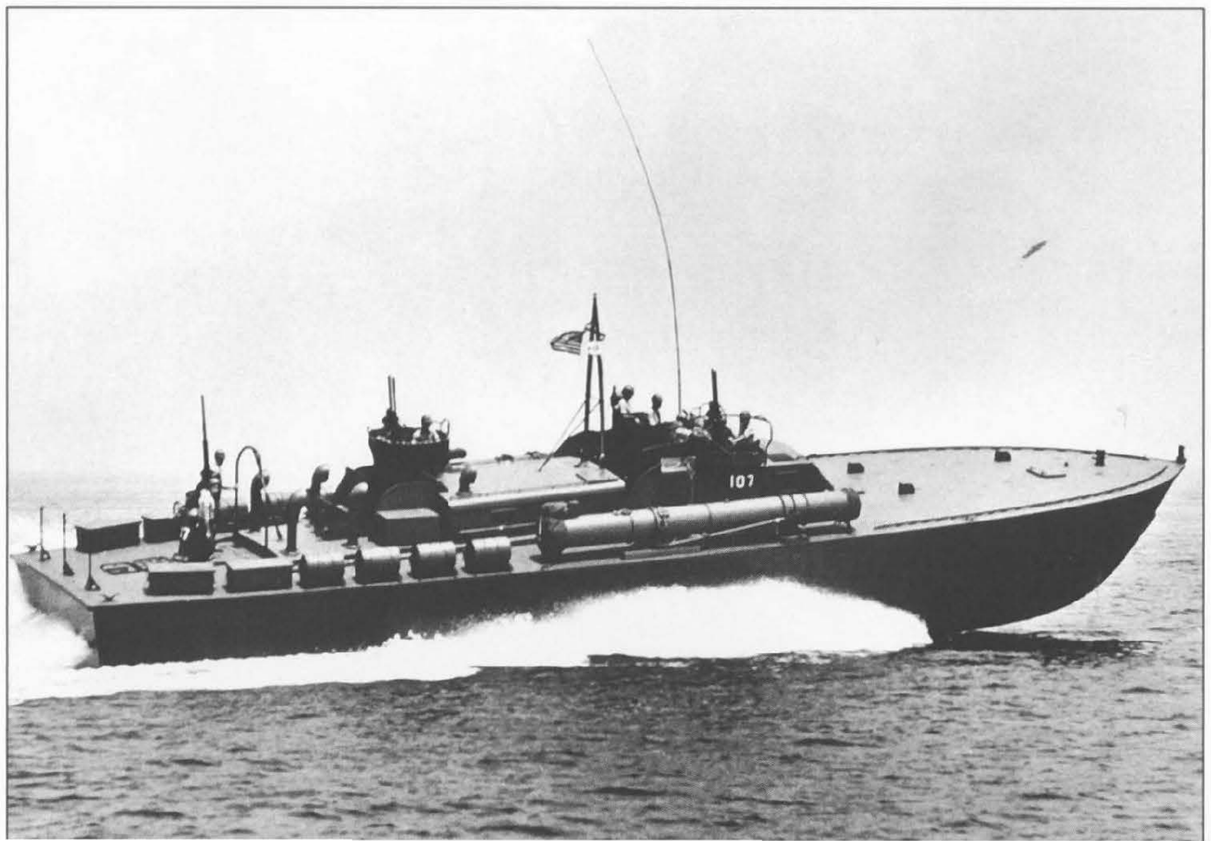


At rest during trials off Bayonne, New Jersey, on 4 August 1942, PT-117 displays the nearly flat foredeck of the PT-103-196 class. Also in view are the early-type mast and the staggered twin-.50-caliber turrets, with the forward turret on the starboard side of the chart house and the aft turret on the port side of the day cabin.



The most famous PT boat of all, 109, is securely stowed on the deck of the USS *Joseph Stanton* at Norfolk Navy Yard on 20 August 1942. The boat, along with others from Squadron 5, were headed to the Panama Canal Zone for temporary duty. The following year, the squadron would chalk up an impressive record in the Solomon Islands.

PT 107 is shown configured with two tubes for Mk. 8 torpedoes and eight depth charges for antisubmarine operations during a tour of duty in the Panama Canal Zone. The 20mm is at maximum elevation. The spacious, uncluttered foredeck of the early 80' Elco boats would soon be put to use increasingly as a gun platform.



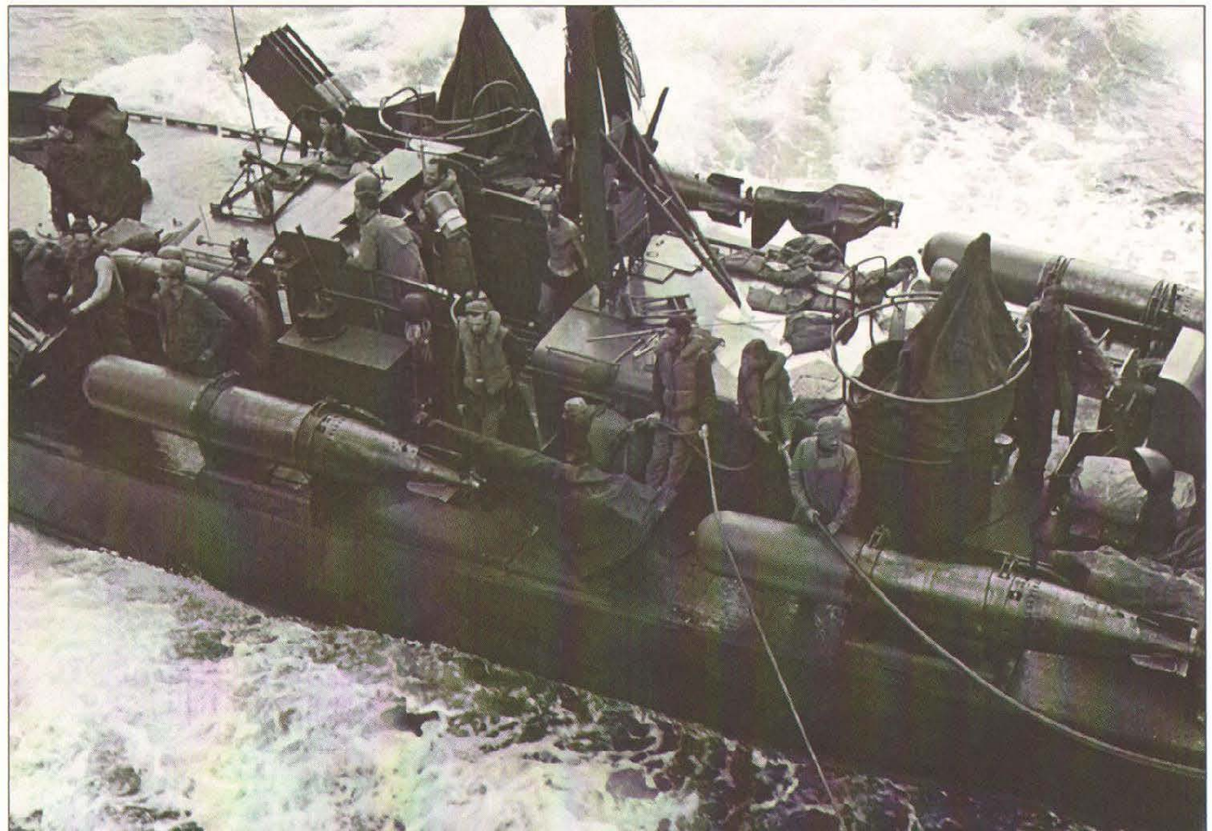
The seaplane tender USS *Pocomoke* (AV-9) refuels PT-107 and another Squadron 5 PT boat, both equipped with four torpedo tubes and *en route* to their new station at Rendova in the Solomon Islands in 1943. Other PT boats follow behind. A sailor obscures the number on the right boat, but there is evidence that it was PT-103. (National Archives)

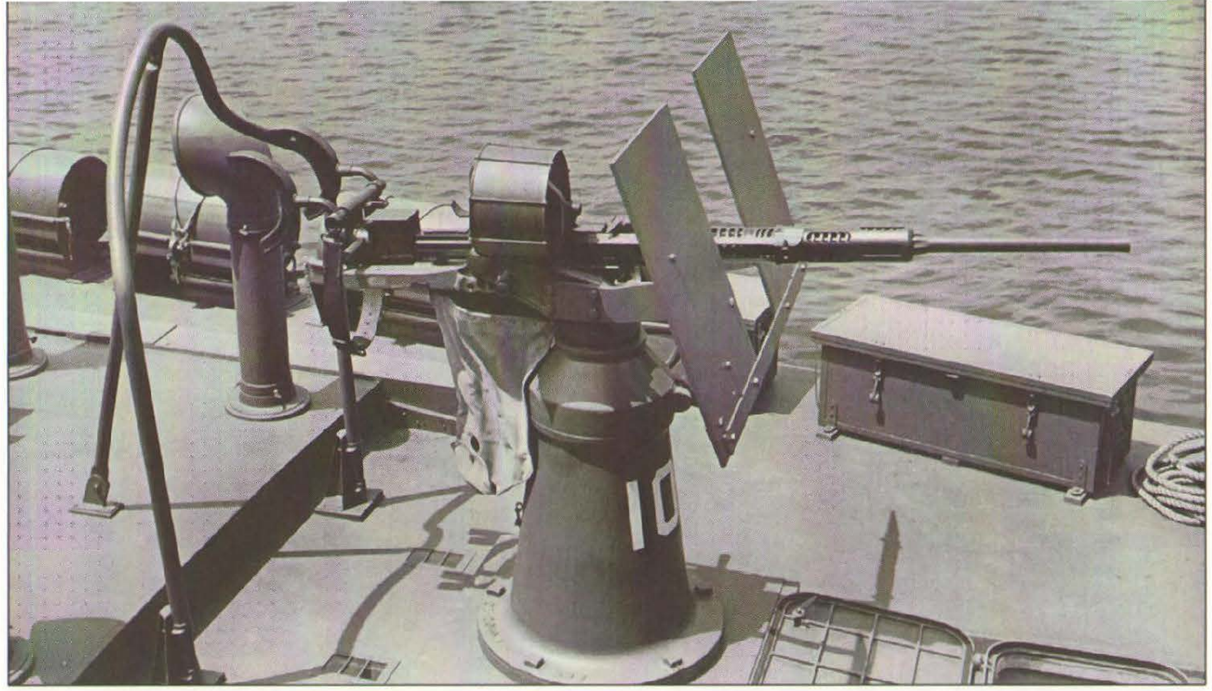
PT-132, "Little Lulu," a camouflaged boat serving with Squadron 7 in the Southwest Pacific, is an example of an early Elco 80-foot boat that underwent a variety of modifications, including additions of the radar mast introduced in 1945, 37mm and 20mm cannons installed on the foredeck, Mk. 50 5-inch rocket launchers, and Mk. 13 torpedoes in drop-racks.

This port-side view of the PT-132 displays the boat's camouflage pattern, a variation of the Measure 31 scheme, as well as the 40mm Bofors gun on the after deck. A canvas awning is rigged over the bridge. PT-132 served with Squadron 7 before its transfer to Squadron 21 in February 1945.

Further details of PT-132's three-color camouflage scheme are visible in this photograph taken at a base in the Southwest Pacific. Canvas covers have been secured over the various guns, but the two Mk. 50 rocket launchers are exposed. The rocket launchers were swung outboard when they were to be fired.

Nicknamed "Tarfu," PT-131 was one of the first PT boats to make contact with the Japanese fleet at the Battle of Suriago Strait in October 1944. Aside from the four Mk. 13 torpedoes, it is armed to the gills for sea-to-shore assault and barge-busting with fixed barrage-rocket mounts, a 60mm mortar on the chart house roof, and an extra .50-caliber and 20mm gun between the torpedoes.



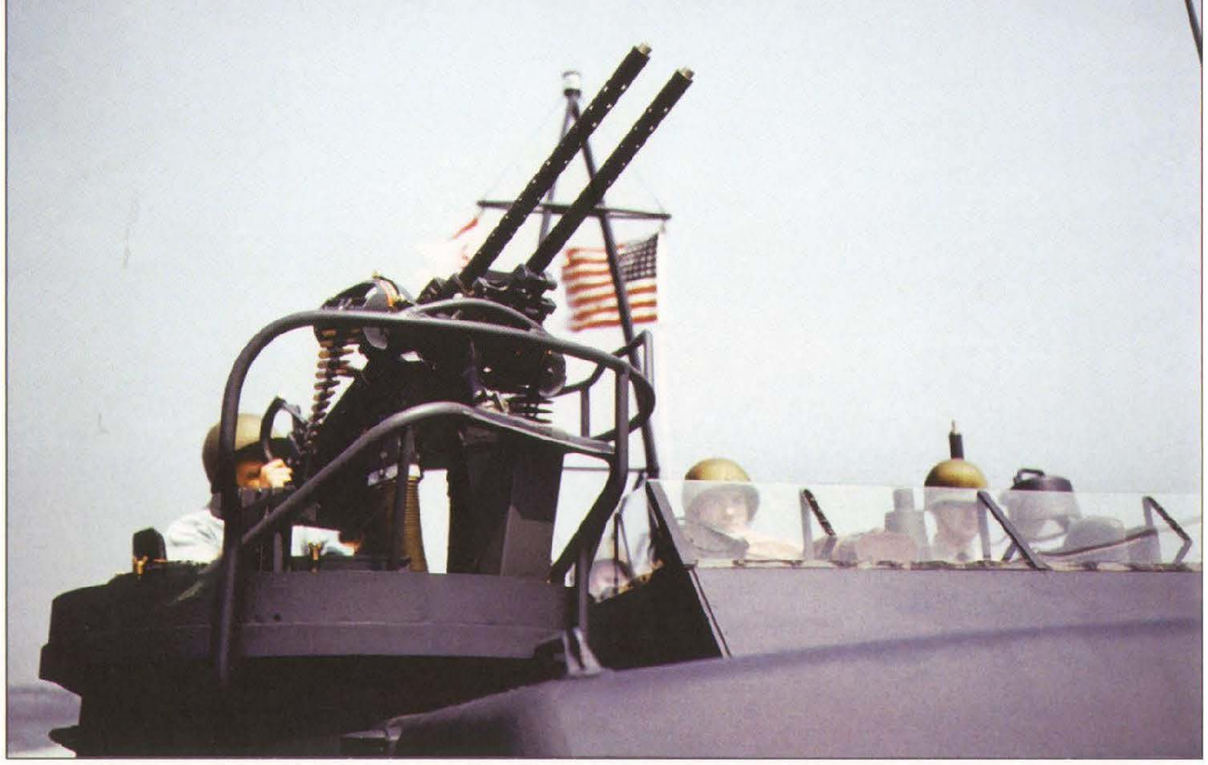


This 20mm Oerlikon cannon was mounted on the fantail of Elco boats between PTs 103 and 109. A 60-round magazine is loaded on top of the gun, which is fitted with shoulder rests and a spent-cartridge collector bag. To the left is the depression rail for the gun, and to the lower right is the lazarette hatch.

The crew of the 20mm gun of PT-140 undergo training off Melville, Rhode Island, the home of the Motor Torpedo Boat Squadron Training Center (MTBSTC), where PT boat crews learned how to operate their craft. The crewman in the foreground is grabbing a 60-round magazine preparatory to reloading the gun. The man on the far side of the mount operates a hand wheel to raise or lower the cradle as necessary. This mount lacks the gun shield that consisted of two armored plates.

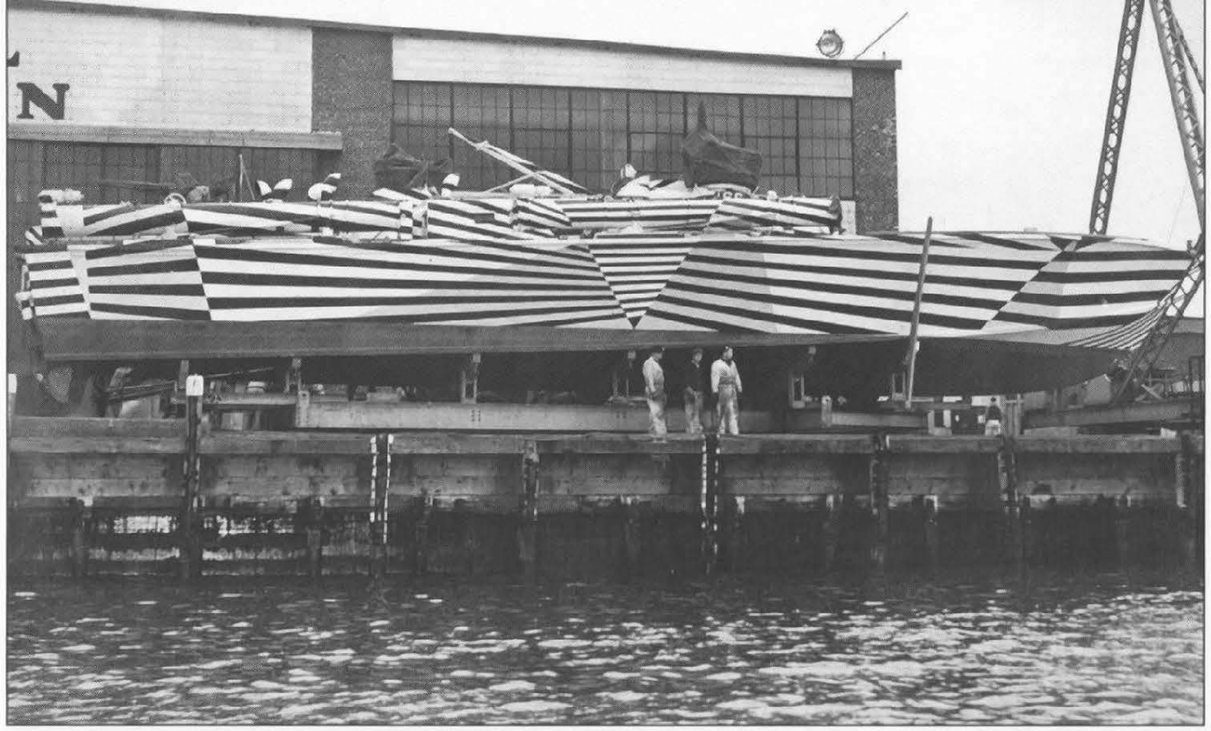
A crewman paints a kill marking on the bridge coaming of PT-134 while the boat's commanding officer, Lt. Edward J. Pope, Jr., looks on approvingly. The marking commemorated a raid on Cebu City in the Philippines on the evening of 24 March 1945, in which PTs 134 and 348 destroyed two railroad freight cars and two barges. There are also kill markings for one Japanese submarine, 24 barges, 17 trucks, and torpedoes fired at the IJN *Yamashiro* in the Battle of Suriago Strait. (Navy History and Heritage Command)

A student at the MTBSTC unloads belted .50-caliber ammunition for the starboard machine gun mount of PT-140. At the time, this boat was armed with depth charges, probably the Mk. 6. Details of the drop racks and release mechanisms are visible. The navy blue paint is wearing off the rack, exposing the zinc chromate primer.

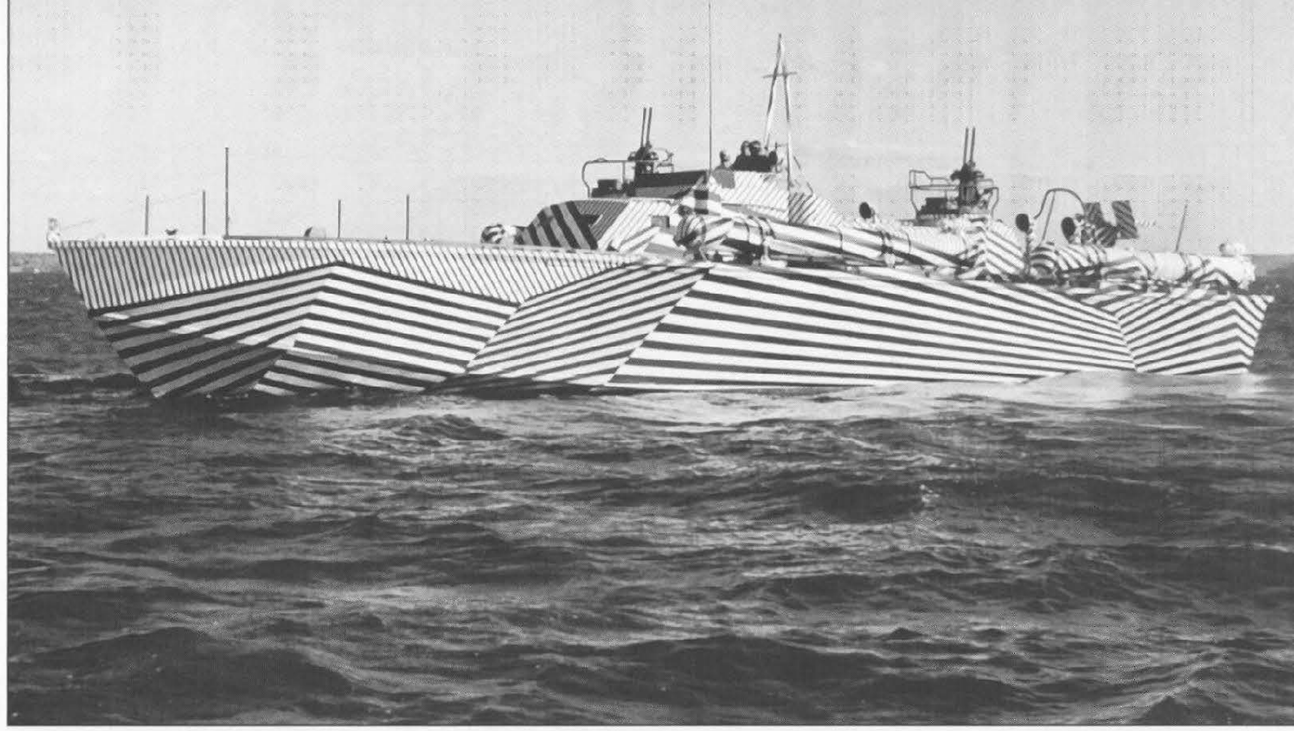


The design of the .50-caliber machine gun turrets of the Elco 80-foot PT boat differed considerably from the turret design on preceding classes of Elco. The open turret had a manually operated race mount. The cage-like structure partially surrounding the tub was the limiter, or depression rail, which physically prevented the gunner from shooting up his own boat.

The gunner of the port .50-caliber machine guns of an Elco 80-footer watches another Elco boat speeding in echelon. The .50-caliber ammunition was stored in trays around the inside of the gun turret and was routed up through the belt-feed mechanisms projecting from the sides of the gun cradles, and thence to the guns.

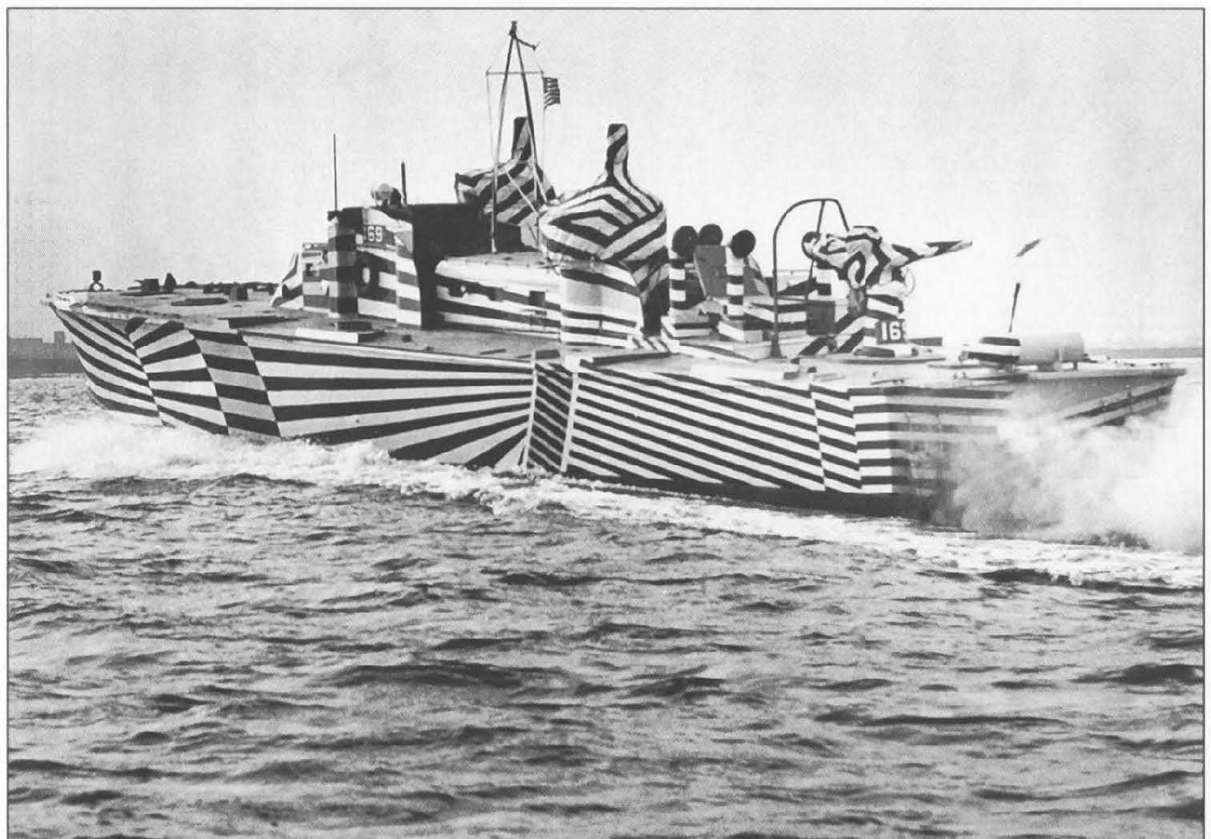


A black and white camouflage known as the "Zebra" scheme, intended to confuse the enemy as to the type and bearing of the boat, was applied experimentally to a squadron each of Elco 80-foot PT boats in the Pacific and Higgins 78-foot boats in the Mediterranean. PT-166 was destroyed by USAAF B-25s in a friendly-fire incident off New Georgia in the Solomon Islands on 20 July 1943.

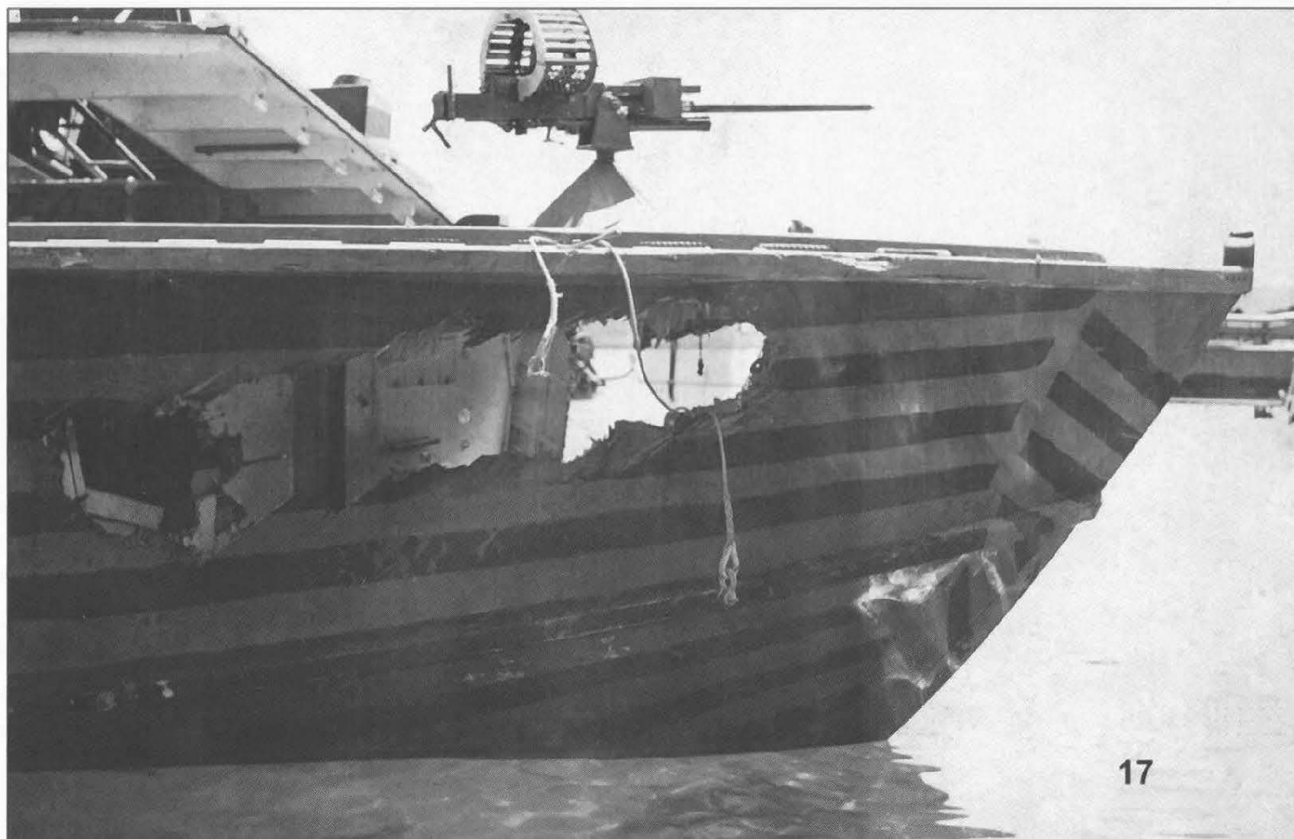


This unidentified Elco 80-foot PT boat is painted in the Zebra scheme. Although the overall idea of the scheme was a mix of patterns of black and white stripes on virtually all vertical surfaces above the waterline, details of the patterns varied from boat to boat. The scheme has even been applied to the mast.

PT-169 shows off its Zebra camouflage scheme. Even the canvas covers for the 20mm cannon and .50-caliber machine guns wear the Zebra stripes. The main deck and roof of the day cabin of this boat appear not to have the stripes, however. The Zebra scheme was discontinued when it proved too complicated to apply and maintain.



Squadron 10 fielded some of the Zebra-camouflaged 80-foot Elco PT boats, including PT-167, commanded by Ensign Theodore Berlin, which took an unexploded torpedo through the bow during an attack by a dozen Japanese torpedo-bombers while operating from the Torokina PT boat base on Bougainville Island, New Guinea, on 5 November 1943. Despite massive damage, the boat survived until after the end of World War II.



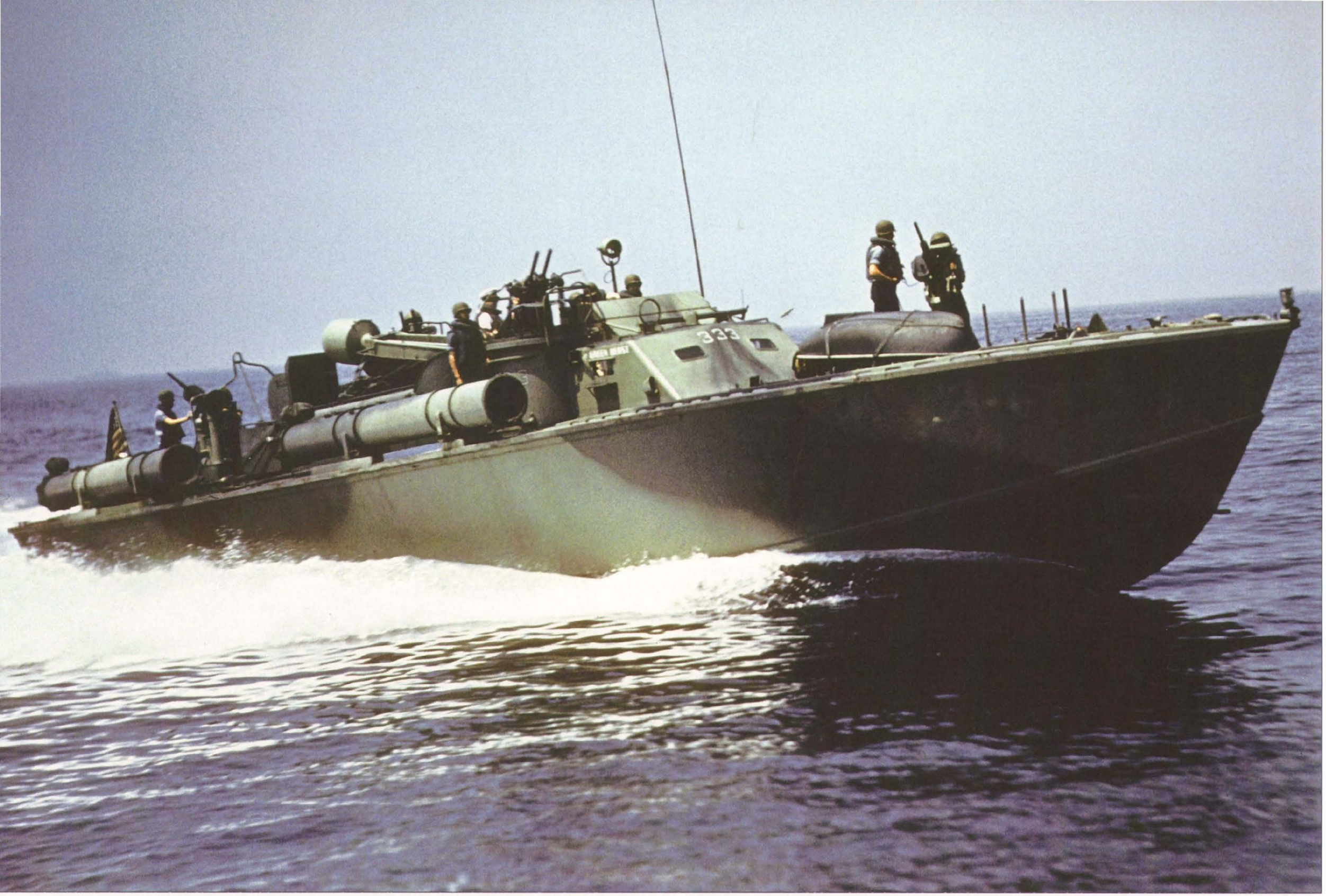
The Elco plant in Bayonne, New Jersey, applied shark markings to PT-196. At the very front of the deck is a fairlead with a navigation light mounted atop it. Above the windshield is an airfoil that was intended to deflect wind and spray. Airfoils were usually removed in service. Later this boat served with Squadron 12 at New Britain Island, New Guinea.

A view of PT-196 from the starboard side reveals that it also had a wavy camouflage pattern sprayed on the side of the hull. To the rear, near the stern, was an experimental auxiliary fuel tank which could be discarded when expended. Not visible is the stern-mounted 40mm Bofors gun.

A group of helmeted infantrymen was photographed aboard PT-177 of Squadron 11, probably in the Philippines, near the end of World War II. It is fitted with the radar mast introduced in 1945, as well as two eight-tube, 5-inch rocket launchers. A light-colored mortar is to the front of the chart house.

Crewmen of an unidentified Elco 80' PT boat pose next to the port Mk. 50 5-inch rocket launcher. Depending on the model number, the 5-inch spin-stabilized rockets had a range of between 2,500 and 10,000 yards, and they gave the boat the offensive punch of a destroyer. Shark faces are painted on the noses of the torpedoes.

The second production block of Elco 80-foot boats was the PT-314-367 class. The first keel in the series was laid on 11 December 1942, with the first example, PT-314, being completed on 11 March 1943, and the last boat finished on 27 July 1943. In addition to PTs 314 to 361, which were built at Elco's Bayonne, New Jersey, shops, PTs 362 through 367 were built from Elco-supplied kits at Harbor Boat Building's plant at Terminal Island, California. This class of boat had the same hull and main structures as the preceding PT-103-196 class, with some revisions. The spray shield was removed from around the engine room hatch, and the former simple hatch was converted into a taller combination hatch/ventilator. During production, the 7-inch ventilator on top of the day cabin and two of the four-cowl ventilators over the engine room were deleted. PT-314 appears here with the original-style mast, a life raft on the foredeck, and depth charges instead of the rear torpedo tubes. (Stan Piet)



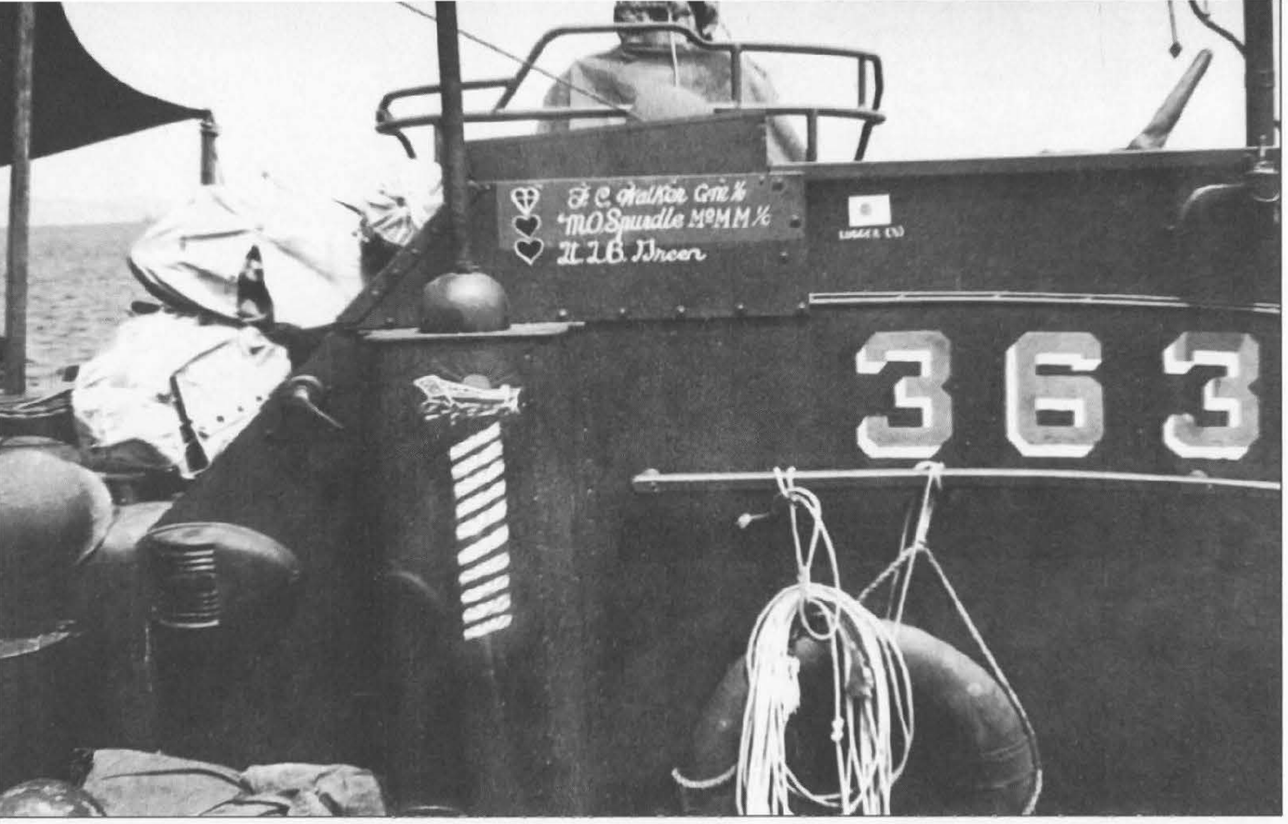
PT-333 exhibits the first radar mast model used on 80-foot Elcos. Introduced with the Elco PT-486-563 class of 1943-1944 and retrofitted to some earlier boats, including PT-333, it incorporated a radome at the top and was retractable, to provide the boat with clearance under low bridges and other overhanging obstructions. During its career, PT-333 went by three successive nicknames: "Hi-De-Ho," "Green Beast" (seen in small letters on the side of the chart house in this photo), and "Thunderhawk." Lashed to the foredeck is a dinghy, to the side of which are two crewmen serving a 20mm cannon. There is a spotlight on a pedestal above the bridge. (Stan Piet)

From left to right, PTs 314, 317, and 316 are nearing completion at the Elco shop. All three were begun in December 1942 and launched in March 1943. Here their early-type masts are retracted, and torpedo tubes, armament, and rigging are yet to be installed.

PT-362 was one of the six boats assembled by Harbor Boat Building in California. Over the bridge is a removable airfoil intended to deflect wind and spray. To protect the insides of the empty torpedo tubes from salt water, covers are fitted over the openings.

PT-315 is seen toward the end of World War II with a retrofitted late-type radar mast, 20mm and 37mm bow guns, and a 40mm Bofors on the after deck. At the time, the boat was with Squadron 4, having transferred from Squadron 5 in April 1943. The Elco boat in the background has the early radar mast.

PT-334 of Squadron 24 was evidently ferrying supplies and civilians, including several women, when photographed during a high-speed run somewhere in the Southwest Pacific. To the rear of the Mk. 13 torpedo are a depth charge rack and an off-white torpedo rack.

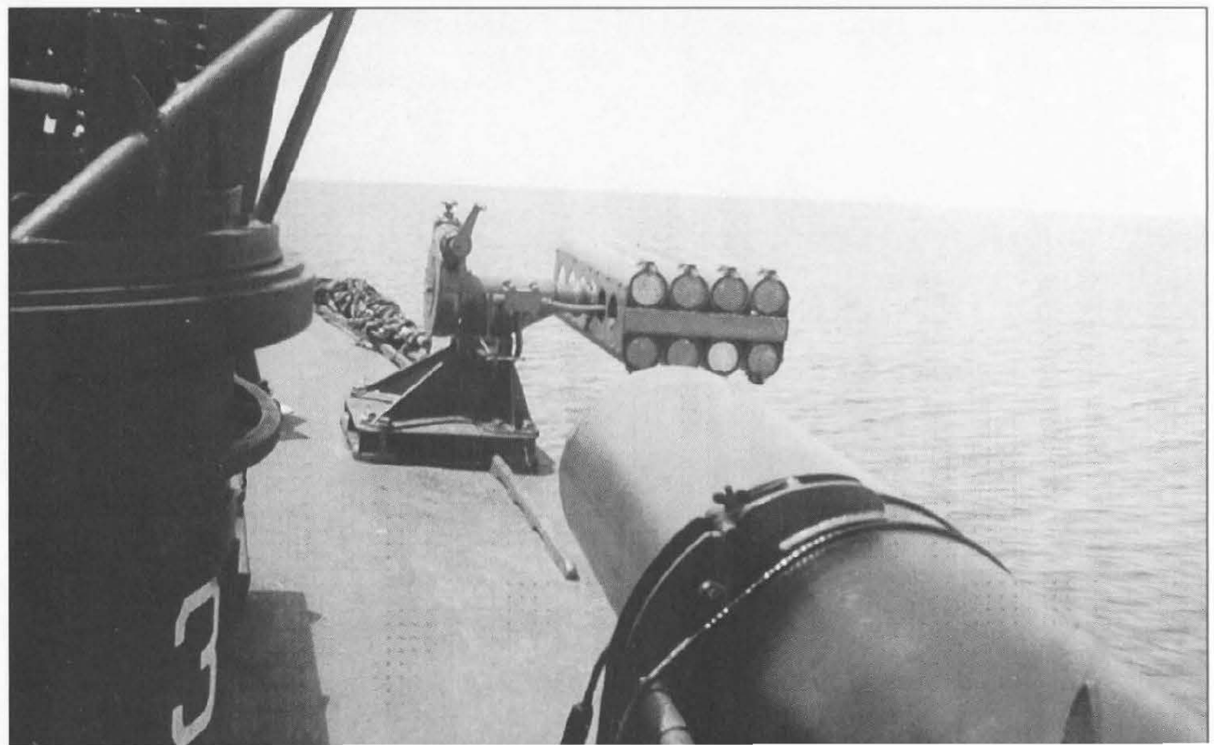


After 37mm gunner "Ace" Walker was killed in action on PT-363, the boat was renamed from "Tojo's Hot-Foot" to "Ace's Avenger" on 9 January 1944. This photo, from the time of the Morotai invasion in September 1944, shows the commemorative notices on the side of PT-363's chart house for Walker as well as Monty Spurdle and skipper Larry Green, who were wounded in action. Kill markings record Japanese barges sunk.

One of the 80-foot Elco boats assembled by Harbor Boat Building, PT-364 served with Squadron 18 in the Southwest Pacific. It is painted in a Measure 31 camouflage scheme. In addition to Mk. 50 rocket launchers and an M4 37mm cannon on the bow, the boat has an early radar mast. In the background are one other early radar mast and two of the 1945-type radar masts.

The Mk. 50 rocket launchers were swung out for firing, as shown here, or swung inboard for storing or reloading. The rockets were fired electrically from the bridge. At the bottom of the mount is the electrical ignition cable. The rocket tubes were elevated at the mount, but they were fixed in azimuth, with the direction of the boat controlling traverse.

As viewed from the rear, a Mk. 50 launcher loaded with eight rockets is deployed in the firing position. At the top of the mount is the elevation crank. To the left is the starboard .50-caliber machine gun turret, and in the center foreground is the front of the forward starboard torpedo tube.

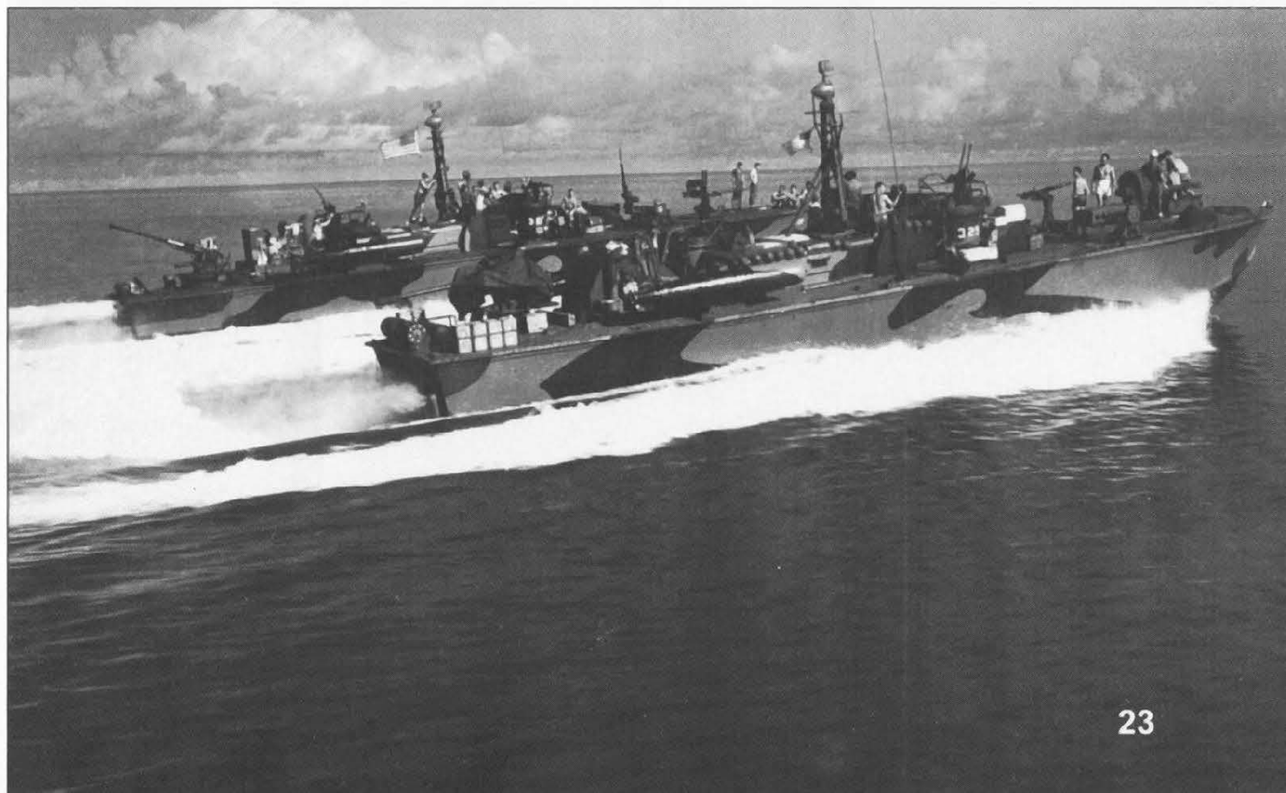


Camouflage netting has been stretched over all of PT-351 except the stern. Poles hold the margins of the netting off the sides of the boat and prop it up next to the port .50-caliber gun turret. Several crewmen are visible below the netting. PT-351 entered service with Squadron 25 on 25 June 1943 and saw action in the Southwest Pacific through the end of the war.

The number of this Elco 80-foot PT boat is not visible, but five boats of Squadron 24 are known to have been fitted with 4.5-inch barrage rocket racks such as those in front of the chart house on this boat. These mounts could loose a volley of 24 rockets in four seconds. In front of the starboard rack is a mortar; on the stern are two depth charges.

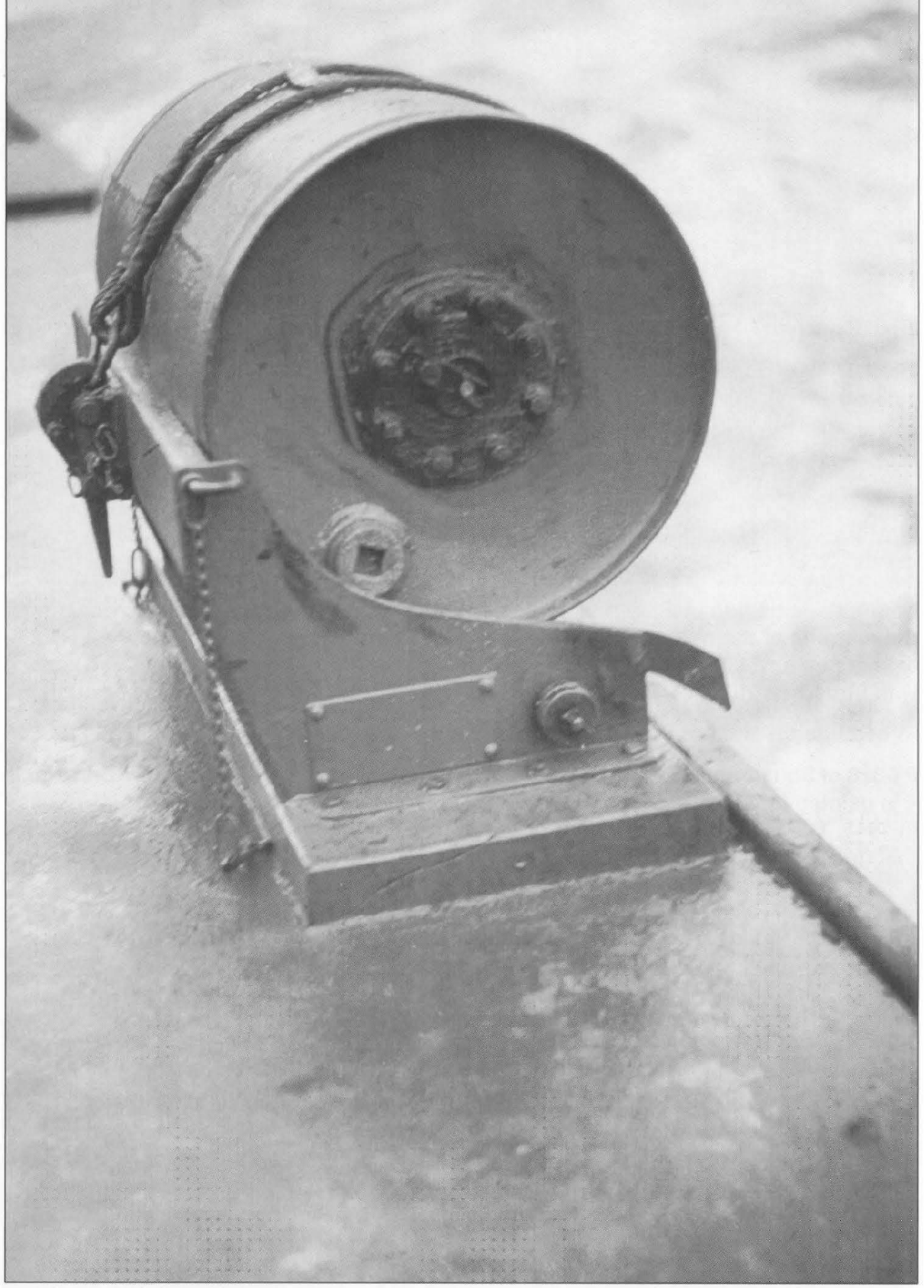
PT-328 of Squadron 21 cruises through Philippine waters toward the end of World War II. It is painted in Measure 31 camouflage and is equipped with the radar mast introduced in 1945. The large rack to the front of the Bofors gun held 40mm ready ammunition for that gun. Dominating the bow is the M4 37mm automatic cannon.

Two 80-foot Elcos from Squadron 21, including PT-329 in the foreground, speed along a calm stretch of water in the Southwest Pacific around the end of World War II. On the stern of 329 is the smoke discharger. A canvas cover is secured over the 40mm gun. A dozen M1 helmets are stowed along the top of the day cabin and aft of the starboard gun turret.



PT-315 was photographed off Miami, Florida, in January 1945. Originally with Squadron 5, the boat was transferred to Squadron 4, the PT boat training squadron, in April 1943. The torpedo and depth-charge racks are empty, and the 20mm gun on the foredeck (with a bipod supporting the barrel) and the 1945-type radar mast are features of a late-war Elco boat.

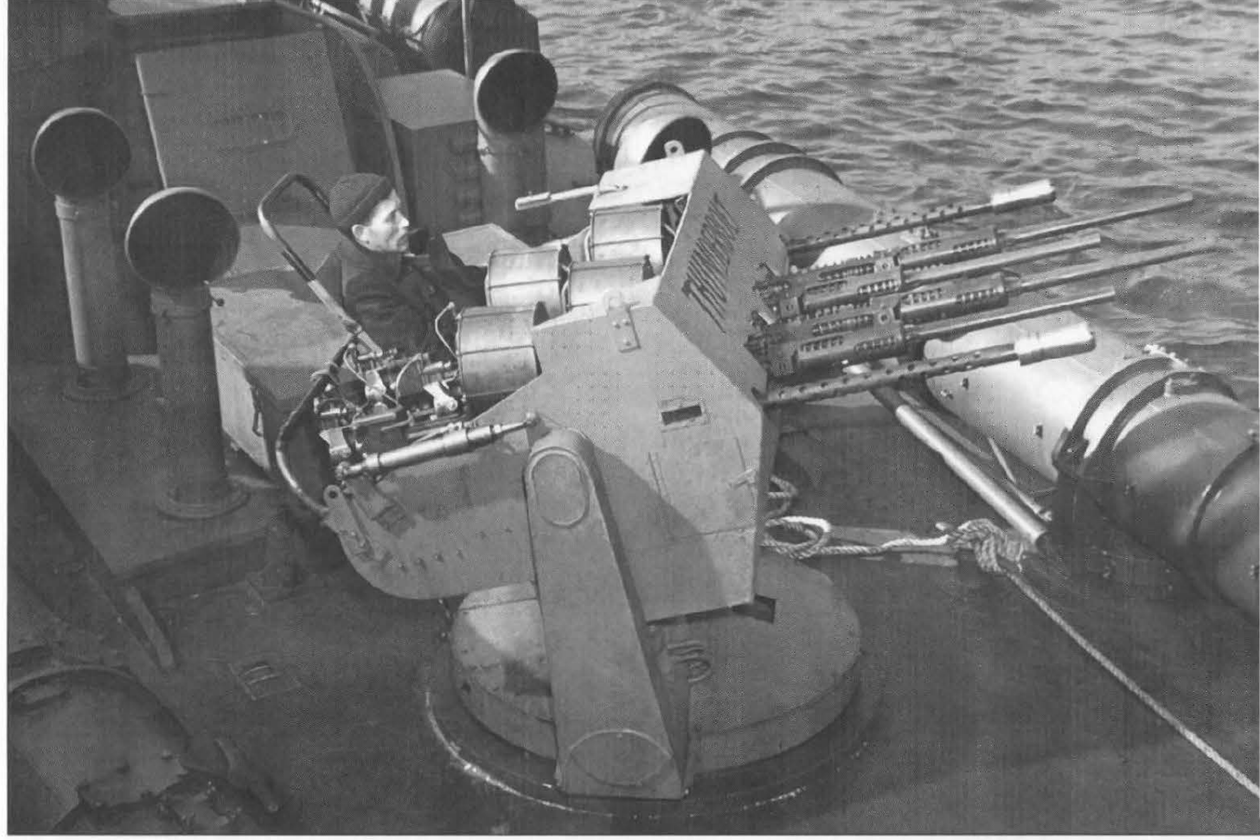
Various designs of bases were used for the 37mm automatic cannon mounts, including this one with perforated facets. Extension handles have been added to the rear of the receiver, for ease of elevating the piece, and the 30-round magazine is full. The makeshift shields were no doubt added in the field; the edges of the pates are jagged.



A Mk. 6 depth charge is secured to a Type C rack (or, release track, as they were called in the technical manuals). Holding the depth charge in place is a two-piece release cable connecting the outboard side of the rack with the release lever at the center of the inboard side of the rack. Pulling up on that lever releases the charge.

The Elco plant fitted PTs 556 to 559 with the Thunderbolt, an experimental quad-20mm gun mount. It had a power-driven turret, four 20mm Oerlikon guns and magazines, with a seat and controls for a gunner. Among these Elco PT boats transiting the Erie Canal are, left to right in the foreground, PTs 558, 557, and 559 with their Thunderbolt systems.

In addition to the four 20mm guns, two .50-caliber machine guns have been added to this PT boat's Thunderbolt mount. The gunner sat to the port side of the turret. Standard 60-round magazines fed the 20mm guns, the arrangement of which is staggered.



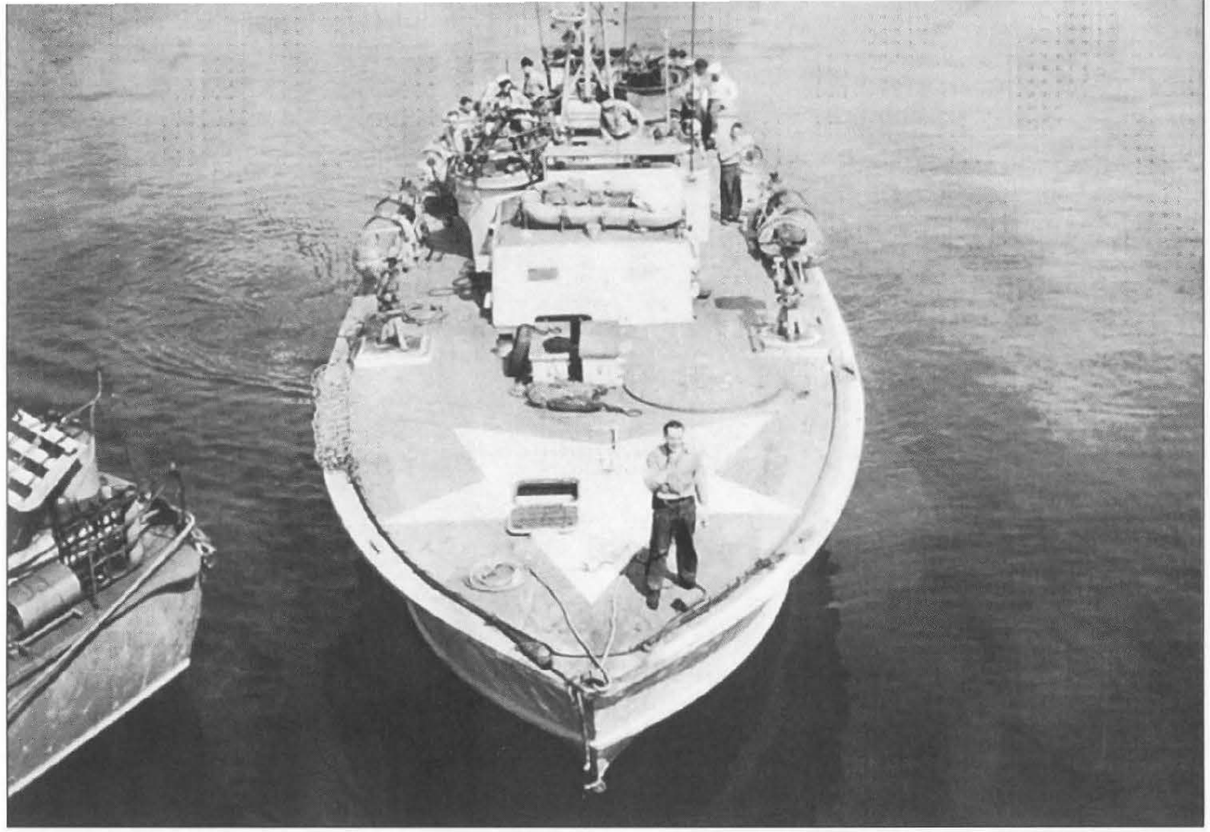
PT-562's 40mm gun crew practices with its weapon. PT-562 was with Squadron 29 at Nice, France. The loader with headphones is ready to drop a four-round ammunition clip into the gun's automatic loader. To the right is the 40mm ready ammunition locker.

The crew of a 40mm gun aboard an 80-foot Elco PT boat fire their weapon. Sitting on the far side of the gun is the gunner, while the lateral gun pointer sits on the near side of the weapon. Behind them, two men are observing the effects of the fire through binoculars.

PT-380 of Squadron 28 was photographed off Brooklyn, New York, in the fall of 1943 shortly after its commissioning. A 20mm Oerlikon gun is mounted on the port side of the chart house, and the .50-caliber guns are at maximum elevation and protected by fabric covers. This boat was part of the PT-372–383 class finished from 3 to 28 August 1943.

The Elco PT-487 was commissioned in January 1944 and was assigned to Squadron 4, the torpedo boat training unit at Melville, Rhode Island. PT-487 boasts a retracted 1945-type radar mast, Mk. 50 rocket launchers with protective covers, and other late-war armaments and fixtures.

This view of PT-487 from overhead shows a very different configuration of weapons on board than is seen in the photo at left. What appears to be a 20mm gun is on the after deck instead of a 40mm gun, and the 37mm cannon is missing from the bow. As in the other picture, however, the radar mast is the 1945 version.



This unidentified 80-foot Elco PT boat sported a large white star on the foredeck as a recognition symbol. Behind the bridge is an early radar mast. To the front of both forward torpedo tubes are a 20mm Oerlikon cannon (starboard side) and a 37mm automatic cannon (port). Aft of the star is the original circular foundation for the 20mm mount.

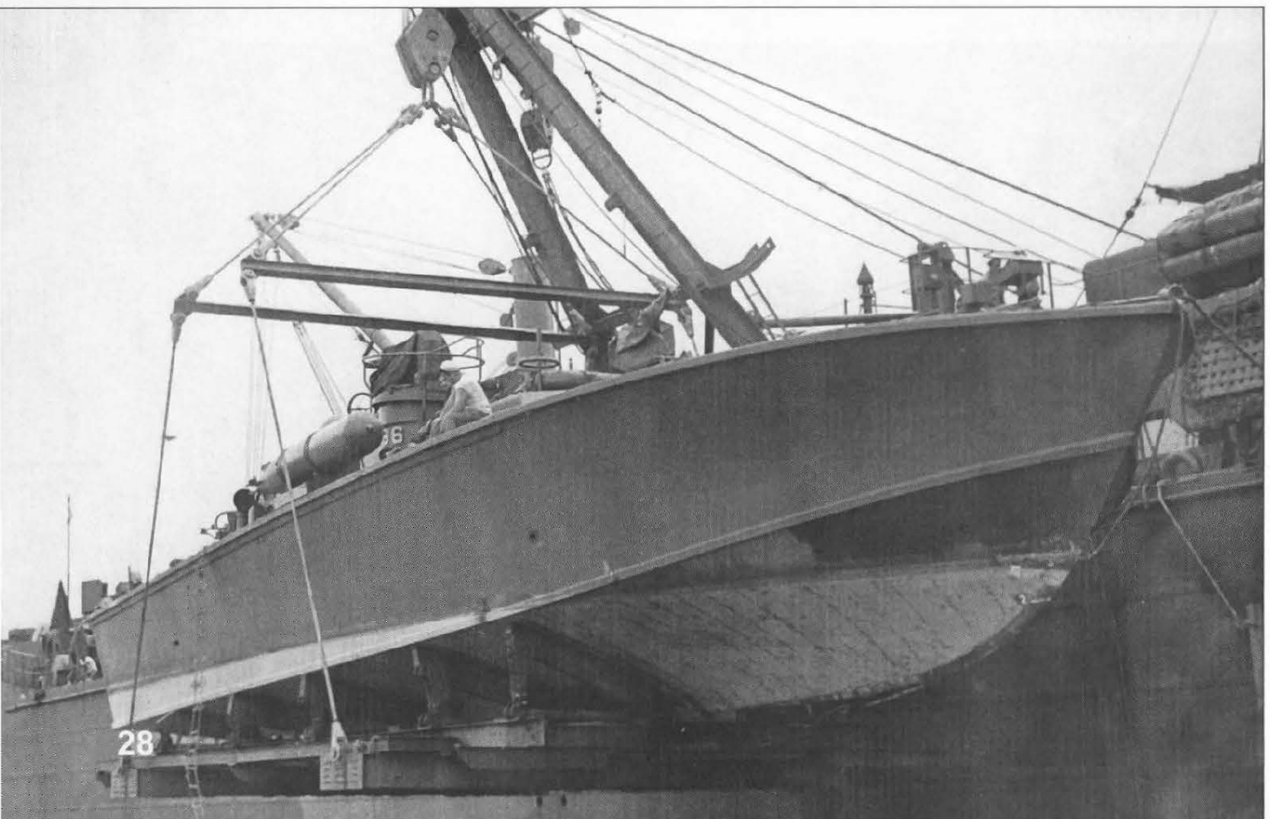
King George VI, accompanied by several Royal Navy admirals, tours PT-504 at Portland Bill, Dorset, England, on 25 May 1944, prior to the Normandy Invasion. Several squadrons, including 34, were based in England at that time. On the front of the bridge is the squadron's insignia: a wolf in sailor's uniform kneeling on a torpedo.

Elco PT boats of Squadron 34, including in the foreground, from left to right, PTs 504, 503, and 518, rest at dock at Portand Bill in Dorset, England. These boats would rescue hundreds of crewmen in the English Channel during the Allied invasion of Normandy. The mottling on the boat transoms is reflected water.

A diver is being lowered over the stern of a PT boat to make inspections or repairs below water. On either side of him on the transom are the eight semi-submerged mufflers, at the tops of which are butterfly valves for bypassing the mufflers and the actuating rods for the valves.

With a large white star painted on its foredeck, PT-513 of Squadron 35 comes alongside a ship during operations in the English Channel. German coastal craft shot a large hole in the side of this boat during an engagement off Le Havre on the night of 25-26 August 1944.

A PT boat is offloaded from a cargo ship. It was a common practice to transport the boats overseas on pallets securely stowed on the decks of ships. The bottom of the hull probably was painted with copper bottom enamel, also called Copperoid, the prescribed color.



The offloading of a PT boat is photographed from the cargo ship. The boat, already armed with torpedoes, will need only minor adjustments and provisioning for it to be ready to begin active operations. The man at right is leaning over a 20mm gun, and the mount for a 37mm gun is to the front of the third man from left.

This late Elco 80-foot PT boat battles the Japanese on the coast of Borneo on 28 April 1945. On the bow, a gunner is firing the 37mm cannon while the twin .50-caliber machine guns join in. As Japanese shipping targets became increasingly elusive in the final year of the war, PT boats often served as gunboats.

Completed 2 November 1943, PT-558 initially served in the Mediterranean with Squadron 29. On the night of 14-15 June 1944, it participated in the sinking of two German corvettes near Genoa, Italy. Here it is armed with a typical late-war array of weapons on the foredeck as well as racks for Mk. 13 torpedoes.

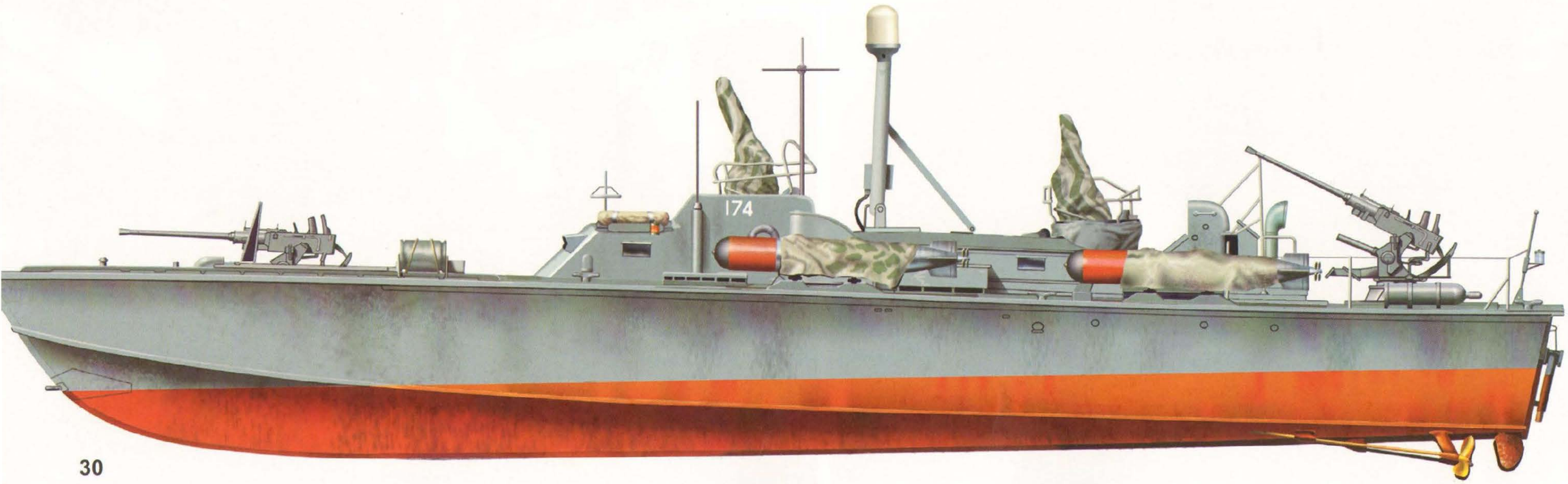
With the engine cover of an Elco 80-foot PT boat removed, two crewmen work on the port Packard 4M-2500 engine. The light-colored pipes at the center and upper left are exhausts. At the top of the photo is the lazarette bulkhead. The lazarette was the compartment at the rear of the hull.

A machinist's mate (nicknamed motor mac) works the reverse gear-shift levers of an Elco PT boat. He is seated above the center engine and is facing forward. Following instructions from personnel on the bridge, he would shift gears when the boat was maneuvering at low speeds.

After the minesweeper USS *Tide* (AM-25) hit a mine off Utah Beach, Normandy, on 7 June 1944, USS *Pheasant* (AM-6) and PT-509 (left), commanded by Lt. Harry M. Crist, stand by to rescue survivors. Two months later, on the night of 8-9 August, a German minesweeper rammed the PT-509 off the island of Jersey. The boat was destroyed and only one member of the crew survived.

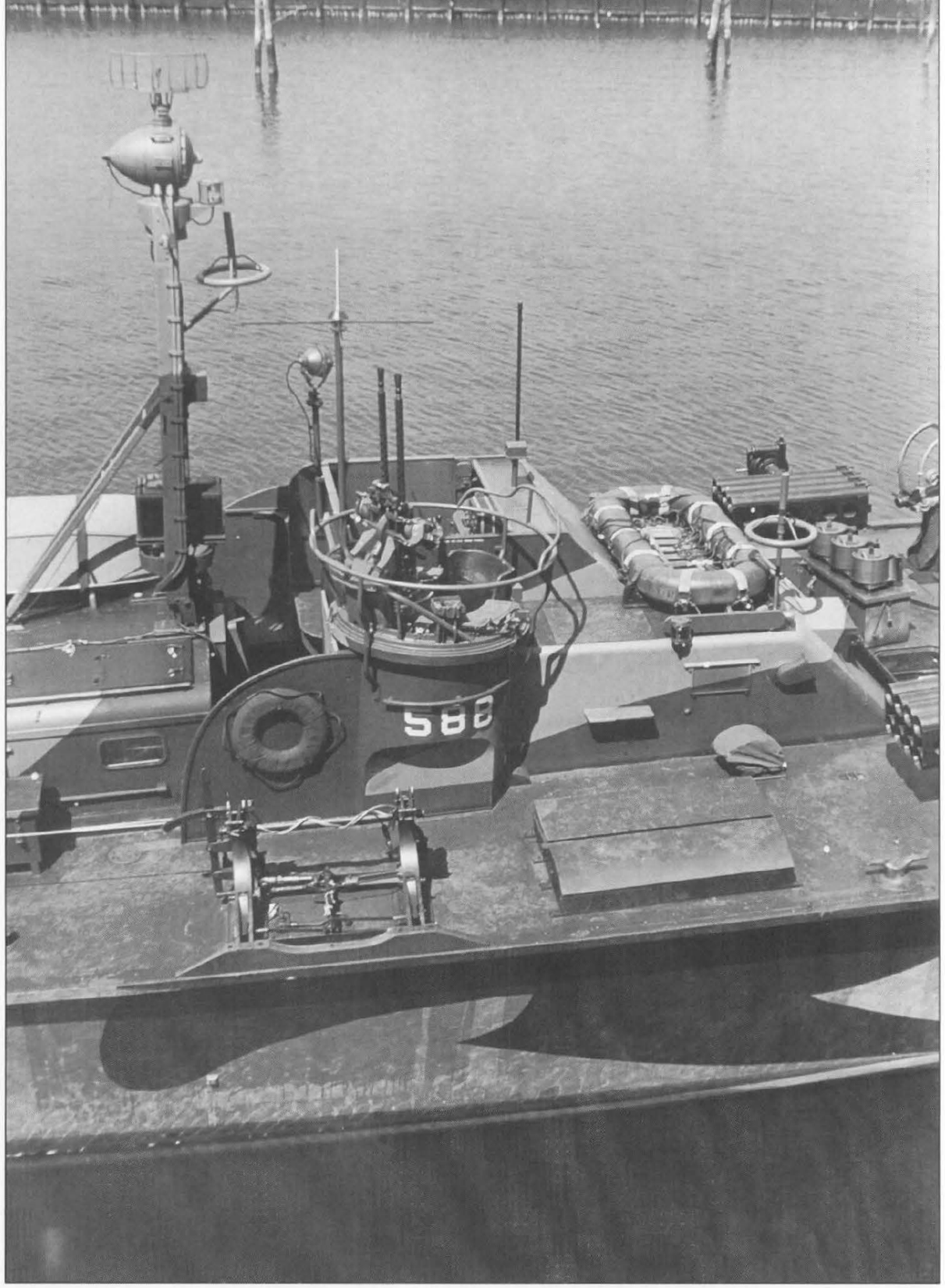
Members of the press tour an Elco boat in the PT-530 to -539 range at New York Harbor around the spring of 1944. Boats in this range were completed between late April and late June of that year. Above the bridge is the retractable wind deflector. Curiously, this boat still has the early mast, although radar masts were being installed on the boats by this period.

Many of the earlier 103-series boats were painted Dark Gray (5-D) on the deck and topsides, while the hull was finished in Navy Gray No. 5 above the waterline. The bottom of the boat was painted with three coats of a proprietary product known as Copperoid.



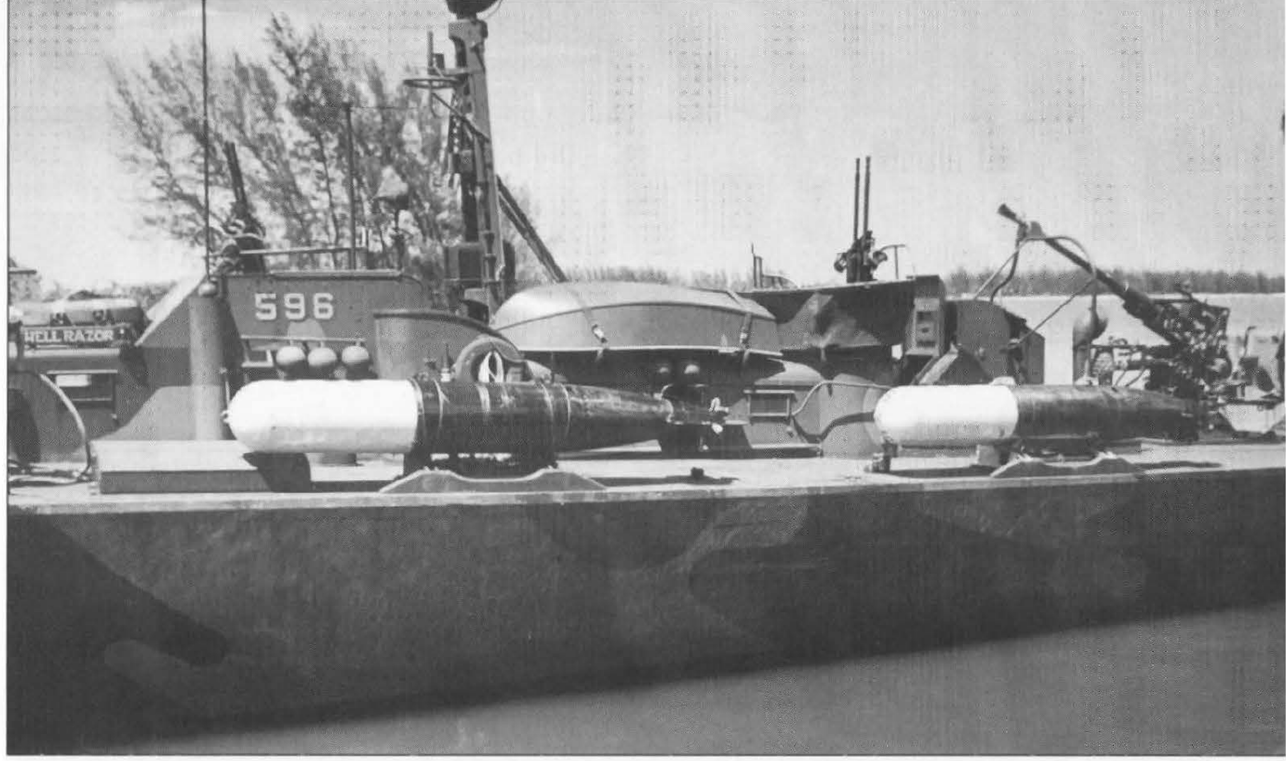
Part of the Elco PT-565-624 class, PT-579 was completed 1 March 1945, and was assigned to Squadron 39, which was commissioned on 6 March 1945. It served at Samar in the Philippines from July 1945 to the end of the war. The craft is painted in the Measure 31, design 20L four-color camouflage scheme using Outside Green 2, Outside Green 3, and black on the vertical surfaces and Deck Green on the decks.

PT-596 of Squadron 40 was commissioned on 10 May 1945, and was stationed at Samar, the Philippines. The boat is fitted with the 1945-type radar mast, four Mk. 13 torpedoes and two Mk. 50 5-inch rocket launchers, shown here rotated out to their firing positions. A crew of four mans the 40mm Bofors, and gunners are at their stations in the .50-caliber machine gun turrets. The smoke discharger is aft of the aft starboard torpedo.



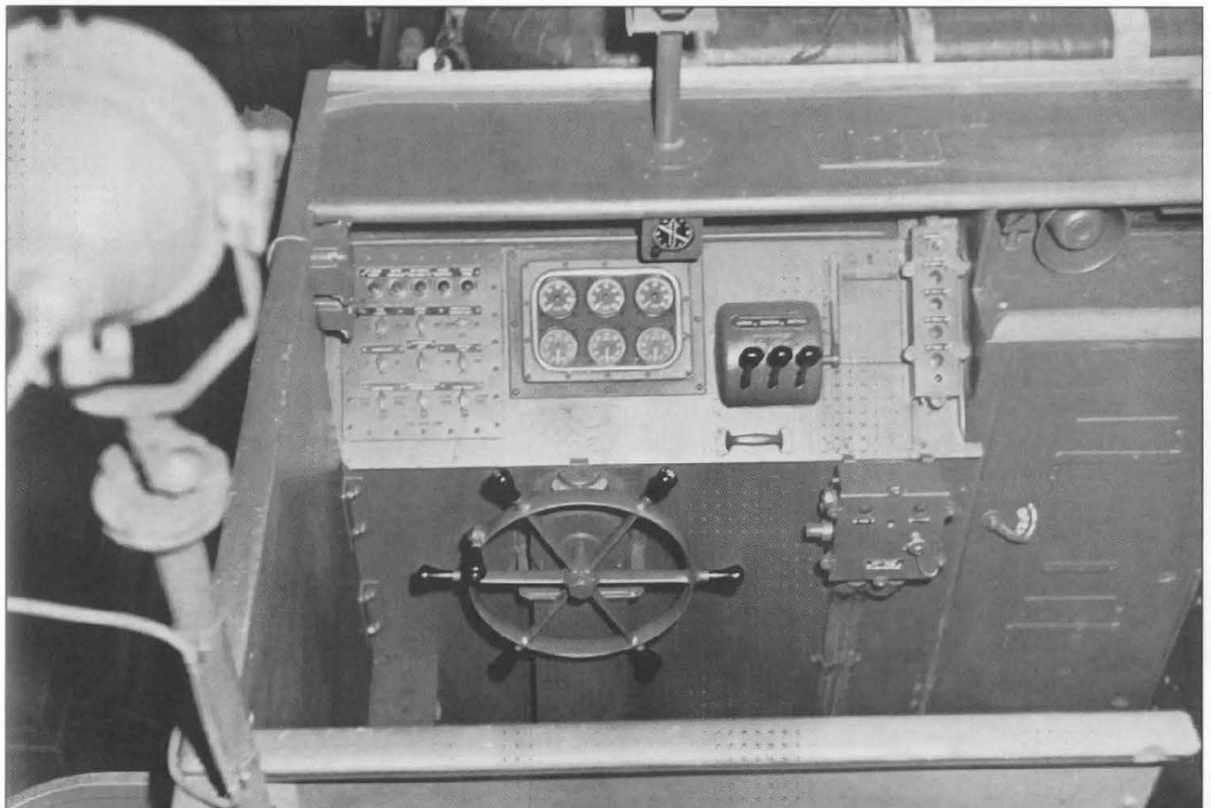
PT-588 of Squadron 39 was commissioned on 10 April 1945. This overhead view provides details of its 1945-type radar mast, torpedo rack, gun turret, and cabins. On the PT-565-624 class, the starboard turret was moved aft three feet, and both turrets were given a forward tilt to facilitate firing towards the front. Also, the lower part of the starboard turret was scooped.

Personnel stand at attention on the decks of Elco 80-foot PT boats during commissioning ceremonies for Squadron 40 at Brooklyn Navy Yard in late April 1945. In the foreground is PT-593. Canvas covers are secured over the Mk. 50 rocket launchers and their elevation mechanisms as well as over the .50-caliber turrets; the .50s are set at maximum elevation. Dinghies are stored on the day cabins, and life rafts are on the chart houses.



Several noteworthy details are visible in this photo of PT-596. Below the nose of the forward torpedo is a stowage box for 5-inch rockets. Three M1 helmets are strapped to the grab rail on the side of the bridge. Surrounding the depression rail of the port turret is a canvas spray shield. Immediately aft of the turret is the open door to the engine room hatch.

Whereas early Elco 80-foot PT boats had throttle controls to the left of the helm, or wheel, these controls were moved to the right of the helm on late-model boats to allow a crewman standing to the right of the helmsman to control the throttles. Above the helm is the instrument panel, to the left of which is the weapons control panel.

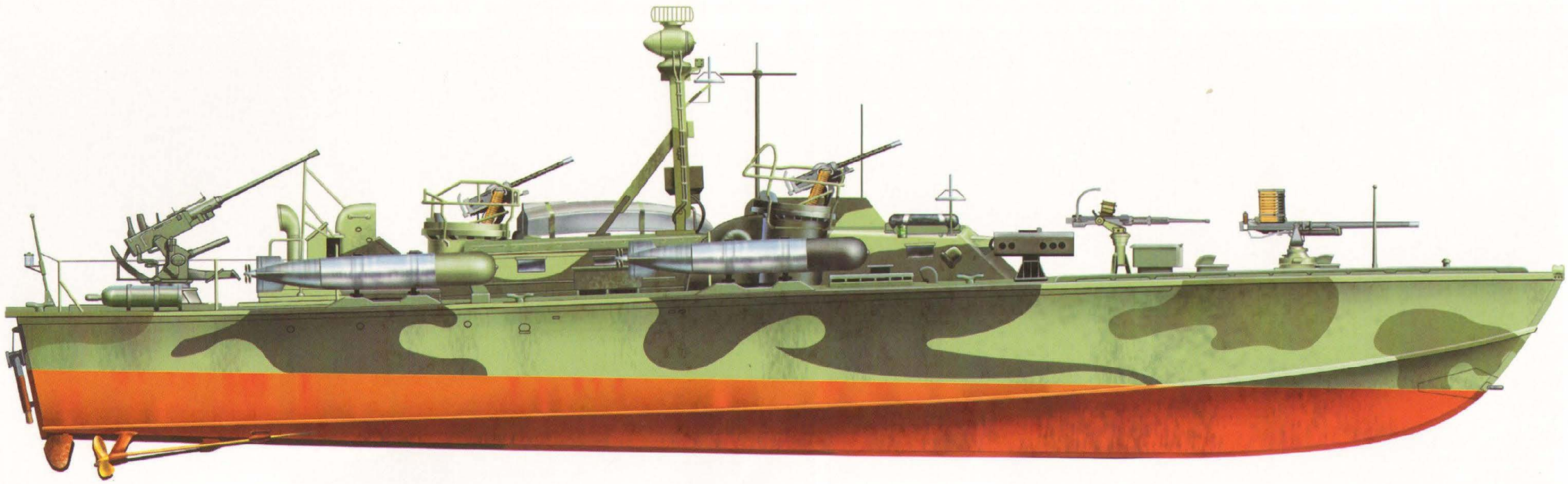


Only the first two digits of this Elco PT boat are visible. It was in the 620–622 range of the PT-565-624 class (PTs 623 and 624 were cancelled before completion) and was completed in October 1945. The 40mm Bofors gun is covered, and its barrel is resting in its travel lock atop the depression rail. An awning is fitted over the bridge.

Several PT boats sit at an unidentified facility during World War II. To the left is an Elco 80' boat, fitted with an early-model radar mast and painted in a Measure 31 scheme that seems to include green and dark green or black paints. Toward the right is another Elco with an early radar mast, but painted gray, and armed with four depth charges aft.

A Higgins 78-foot PT boat (left) and Elco 80-foot PT boat (right) are in floating dry docks for repairs and maintenance. The chine rail along where the side of the hull meets the bottom is more pronounced on the Elco boat. Camouflage netting and tarps have been erected over the Elco vessel.

The camouflage pattern applied to PT boats differed from side to side. PT-596 was painted in a scheme known as Measure 31, Camouflage Design 20L. This scheme included Deck Green (20-G) for some of the horizontal surfaces, Ocean Green (5-OG - light green) and Navy Green (5-NG - dark green).



PT-72 was the number-two boat in the first production block of Higgins 78-foot boats, the PT-71–94 class, the first hull of which was laid down 2 December 1941, and the last boat of which was finished 20 July 1942. After serving with Squadron 4, the PT boat training unit, PT-72 saw action with Squadron 2(2) in the English Channel at the time of the invasion of Normandy.

Specifications

Length	70 feet
Beam	19 feet 11 inches
Displacement	33 tons
Powerplant	Three 1,200 hp Packard liquid-cooled engines
Armament	Two twin .50 caliber Dewandre machine gun turrets and four MK VII torpedoes. Provision for two Lewis machine guns mounted on either side of the pilot house.
Speed	39 knots
Range	550 miles
Crew	17

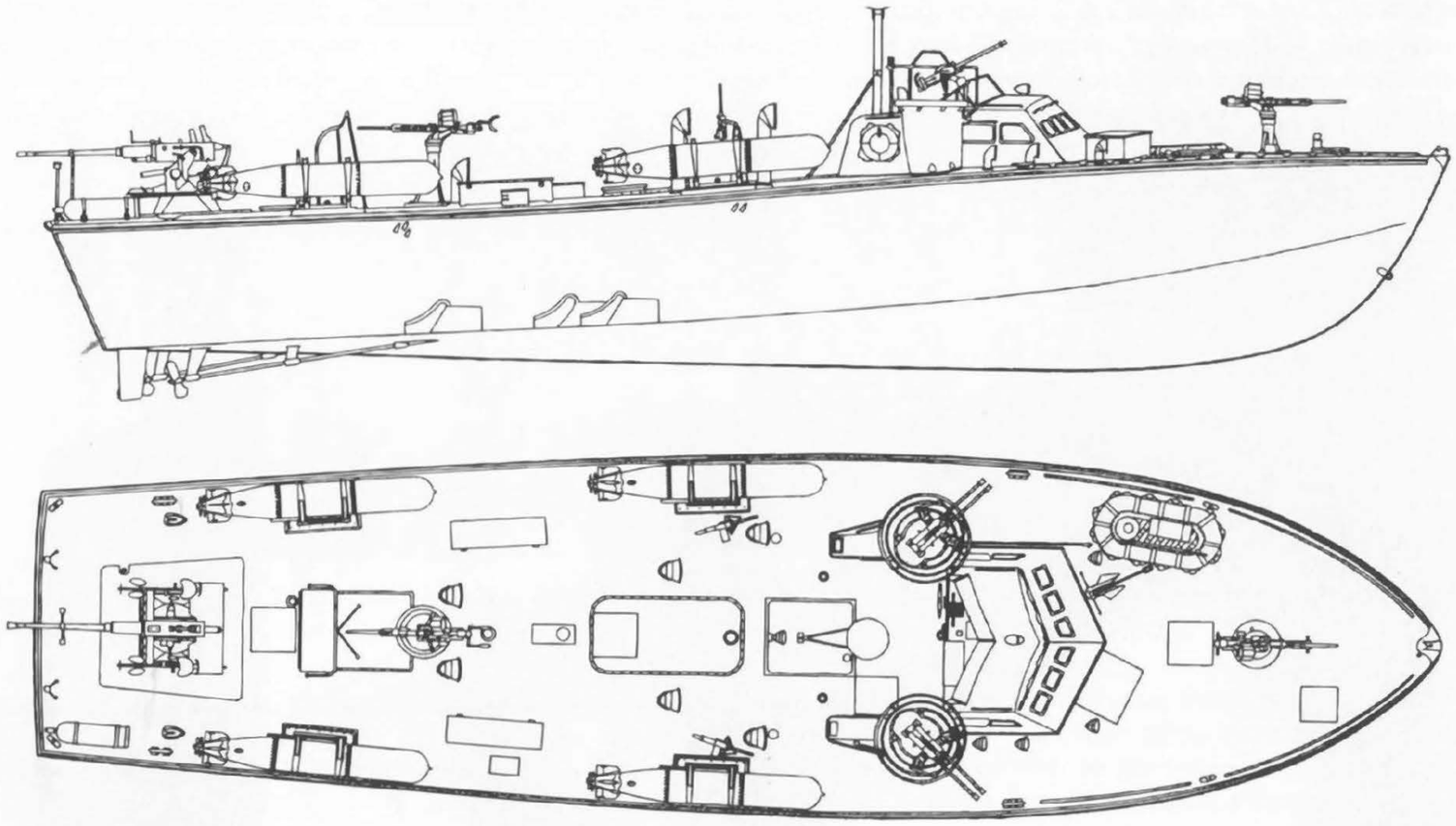
Higgins PT boats

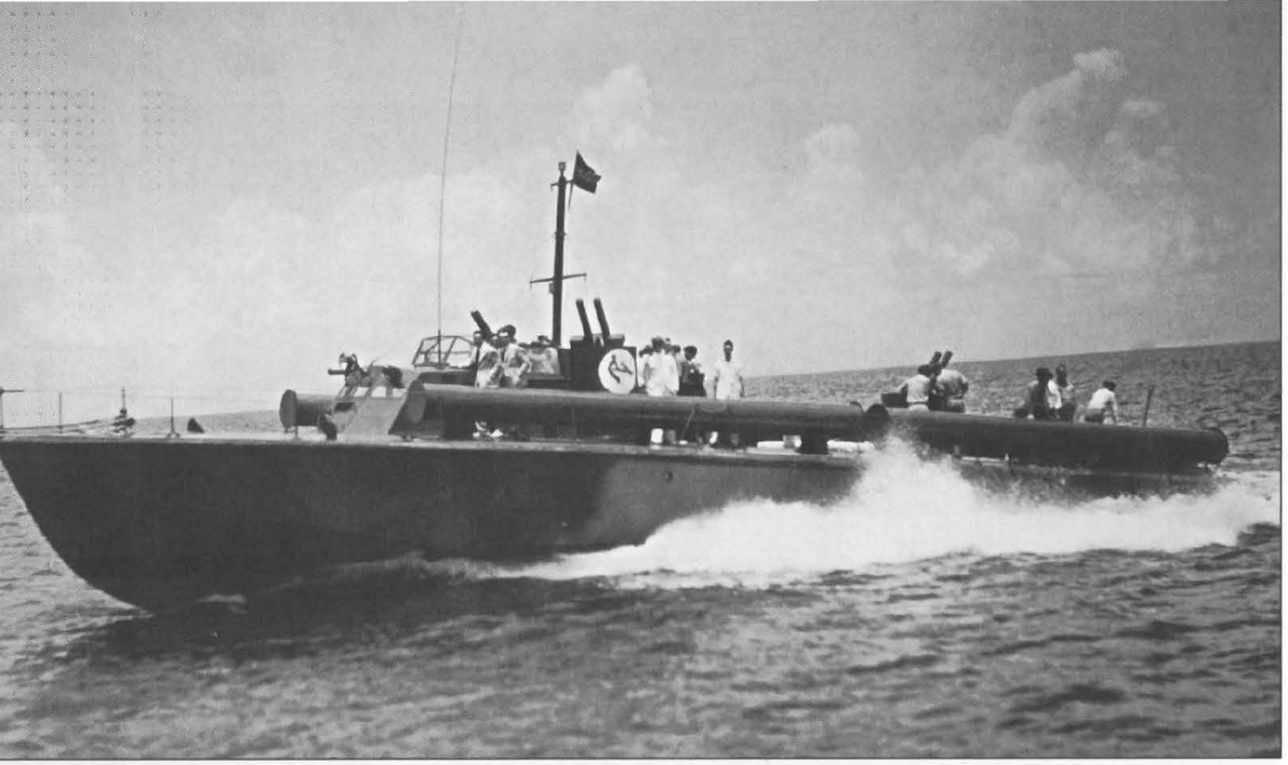
Besides the Electric Launch Corporation (Elco), the other significant U.S. PT boat maker was Higgins Industries of New Orleans, Louisiana. Owned by Andrew Jackson Higgins, a man convinced that his firm's talent, both in engineering and production, was second to none, Higgins Industries eschewed others' designs, instead creating their own.

The original Higgins PT design was a 70-foot boat designated PT-70. Although it faired well in the "Plywood Derby" trials, the Navy determined that it wanted boats no less than 75-feet long, and no more than 82-feet long. Higgins engineers redesigned their boat, and subsequently the firm received an initial contract for 24 vessels.

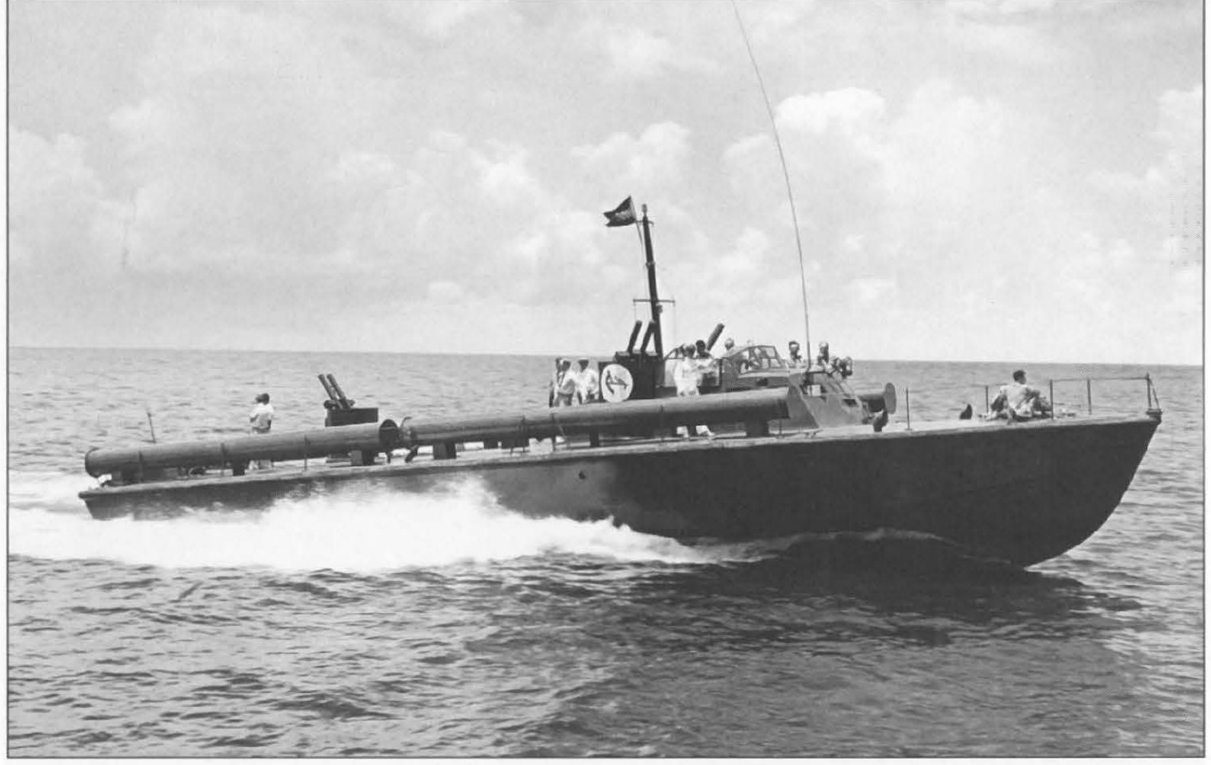
Lacking the graceful lines of the Elco, the 78-foot Higgins boats were notably rugged, however. Higgins crews had a bit wetter ride than their counterparts aboard Bayonne-built vessels, but they had the tactical advantage of sailing a more maneuverable boat. Ultimately, only 209 of the 78-foot PTs were built by Higgins, in contrast to Elco's output of 326 of its 80-foot boats. Despite this initial numerical disadvantage, today more Higgins-built boats survive, although even they number fewer than a half dozen. Although all the production Higgins boats can be regarded as belonging to the PT-71 class, notable design variations appeared during the course of the production run.

As with the Elco, as the war wore on, the weight and armament of the Higgins boats continued to grow. Later model boats boasted dual eight-tube rocket launchers near the front of the vessel, and a Bofors gun on the stern.





The Higgins 70-foot PT boat made its debut when Higgins submitted the PT-70 as its entry in the "Plywood Derbies," the U.S. Navy's 1941 competition to select designs for its PT boats. The 70-foot boat had three Packard 1,200-horsepower engines and carried dummy machine guns and torpedo tubes. The Higgins banner flies from the mast.



In the first Plywood Derby, PT-70 performed adequately in preliminary speed tests but had to drop out of the 190-mile high-speed race because of structural damage to the frame and deck. In the second derby, PT-70 came in second in the speed test but again suffered damage to the deck and hull planks.

The PT-70 design included a chart house, open bridge, two machine gun turrets toward the front of the boat, and a fairly uncluttered mid and after deck: features that would carry over to Higgins' production 78-foot PT boats. This prototype had a third turret on the after deck and two depth-charge racks on the fantail.

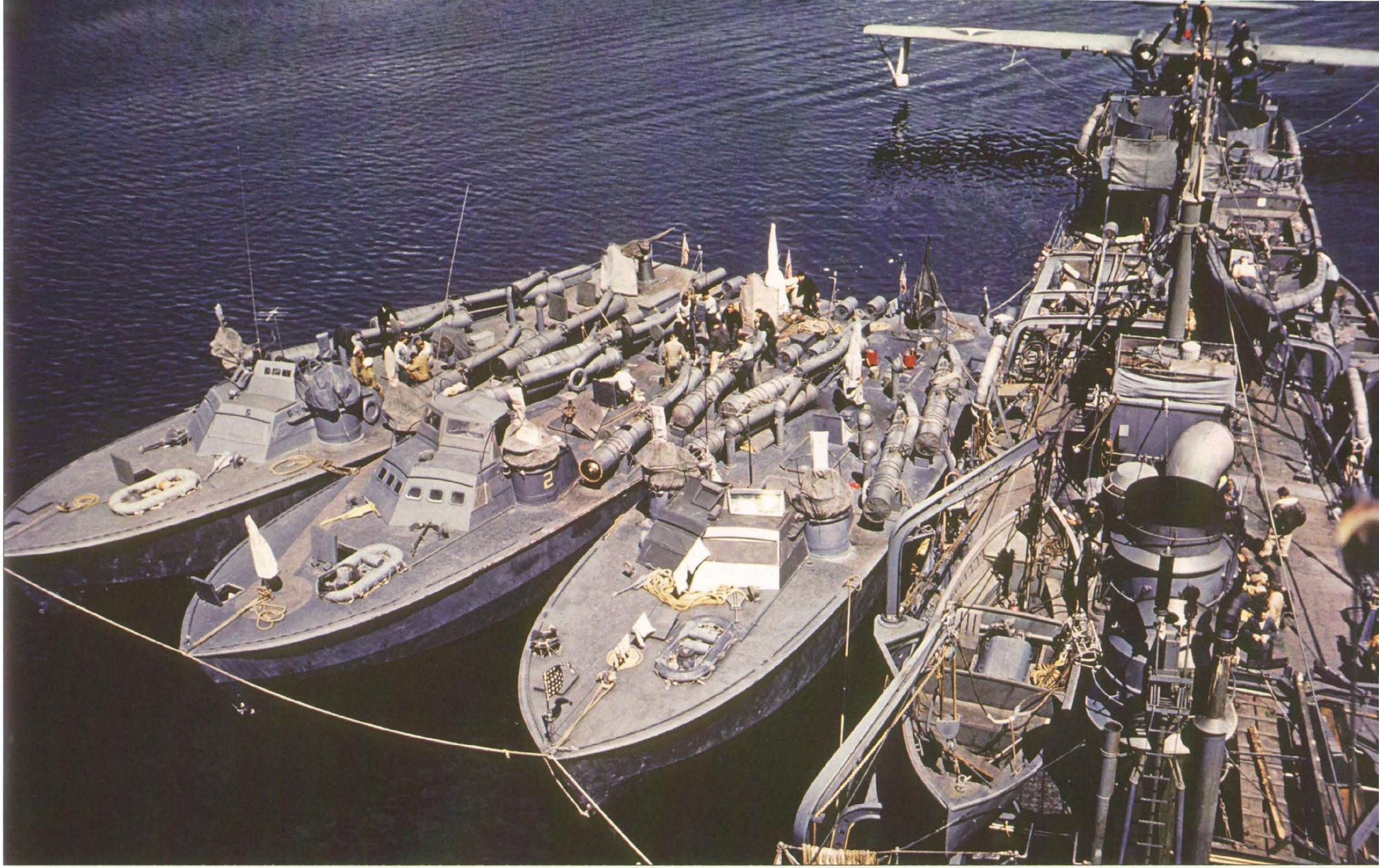
The chart house of PT-70 had three facets on the forward side, whereas the production Higgins 78-foot PT boats would have just two. A Plexiglas windshield was installed on the bridge. Ultimately, PT-70 was redesignated YP-107 on 24 September 1941, and it served as a district patrol vessel.

PT-562, an Elco boat completed 11 November 1943, and assigned to Squadron 29, and PT-204, a Higgins 78-foot boat completed 23 January 1943, and serving with Squadron 15, both operated in the Mediterranean Sea. A mere glance reveals differences in the shapes of the hulls, chart houses, and armament positions of these two types of PT boat.

As seen on PT-80, the torpedo tubes of Higgins 78-foot boats had compressed air flasks on top to propel the torpedoes out of the tubes, rather than the black powder charges used on the Elco boat torpedo tubes. The stern of the Higgins boat lacked engine exhausts: these were instead located three on each side of the boat, as evidenced by the churning water below the waterline on the side of PT-80.

PT-84 was one of the Higgins boats detailed to Squadron 13, with which it served from 7 December 1942 until the end of the war, seeing combat from the Aleutian Islands to the Southwest Pacific. White numbers indicating the draft are painted on the bow, while the boat numbers are in black on the top front of the chart house.

PT-81, which also served with Squadron 13, is shown around the time of its commissioning in December 1942. The insignia of the mosquito boats is painted on the turret. Whereas the turrets of some of the first 10 Higgins PT boats were located aft of the bridge, by PT-81 they had been moved forward, next to the bridge.



Three Higgins 78-foot boats of Squadron 13 are secured to the USS *Gillis* (AVD-12), a seaplane tender-destroyer, at Casco Cove, Massacre Bay, in the Aleutians on 21 June 1943. A PBY Catalina rests off the stern. Various Plexiglas windshields were in use and the canvas windscreens have been lashed to the depression rails forward of the 20mm guns on the fantails of the two boats to the left. The Higgins 78-foot PT boat provided outstanding service during World War II, even though the Elco 80-foot boat is generally remembered as the preeminent U.S. patrol-torpedo boat. A total of 209 Higgins boats were completed: about two-thirds the number of Elco 80-footers produced. Fifty-six were exported to the USSR and 22 to the UK under Lend-Lease, with the remainder serving with the U.S. Navy. The Higgins boats were stockier than the Elcos and had much more clear deck space, having only a chart house and no day cabin. The .50-caliber machine gun turrets were mounted opposite each other to the rear of the bridge, rather than staggered as on the Elco boats. The engine room was more spacious than that of the Elco, so it was possible to configure all three Packard 4M-2500 1,200-horsepower V-12 engines for direct drive.

Four Higgins 78-foot PT boats moor together, including one at the far end with an early-model radar mast and a group of sailors conferring on the foredeck. Many notable features are visible, including the covers fastened over the windows on the chart houses and over most of the machine gun turrets. On the second boat in line, the cover of the starboard turret has been removed and is leaning against the front of the chart house. A variety of windshield styles, raised and lowered, is visible, and the bridge of the boat to the far left has a removable awning. On the first two boats, the hatches on the foredecks leading down to the crew quarters are open, and life rafts are stowed on the foredecks. (Stan Piet)

Motor Machinist Alfred G. Abeckerle of Squadron 16 snapped this photo of the Williamsburg Bridge as PT-72 cruised on the East River past Manhattan in early 1943. The 20mm Oerlikon gun and pedestal mount are at the center of the fantail, with the torpedo tubes and their prominent, bent air flasks to either side.

Abeckerle photographed another early Higgins boat from his boat as the vessels made their way through icy waters in the New York City area in early 1943. Two depth charge racks are visible on the stern of the lead boat.

Gilbert Adams, a torpedo man on PT-72, is bundled against the elements as he stands on the icy after deck next to the 20mm gun mount. The large size of the air flask of the starboard aft torpedo tube is evident.

Two Higgins boats navigate a narrow waterway *en route* to New York City as a crewman signals with flags to the following boat. Aft of the two ventilators at center is the depression rail for the 20mm gun, fitted with a canvas wind screen.

The front of the compressed air flask is to the far left in this shot of an early Higgins boat torpedo tube. Turning the lever at the front of the flask blew the torpedo from the tube.

Several torpedoman's mates service a Mk. 13 torpedo. The second man from right is making adjustments in the compartment holding the gyro and starting gears and depth-setting mechanism. Drop racks for Mk. 13 torpedoes eventually replaced torpedo tubes on the Higgins 78-foot boats and also the Elco 80-foot PT boats. (National Archives)

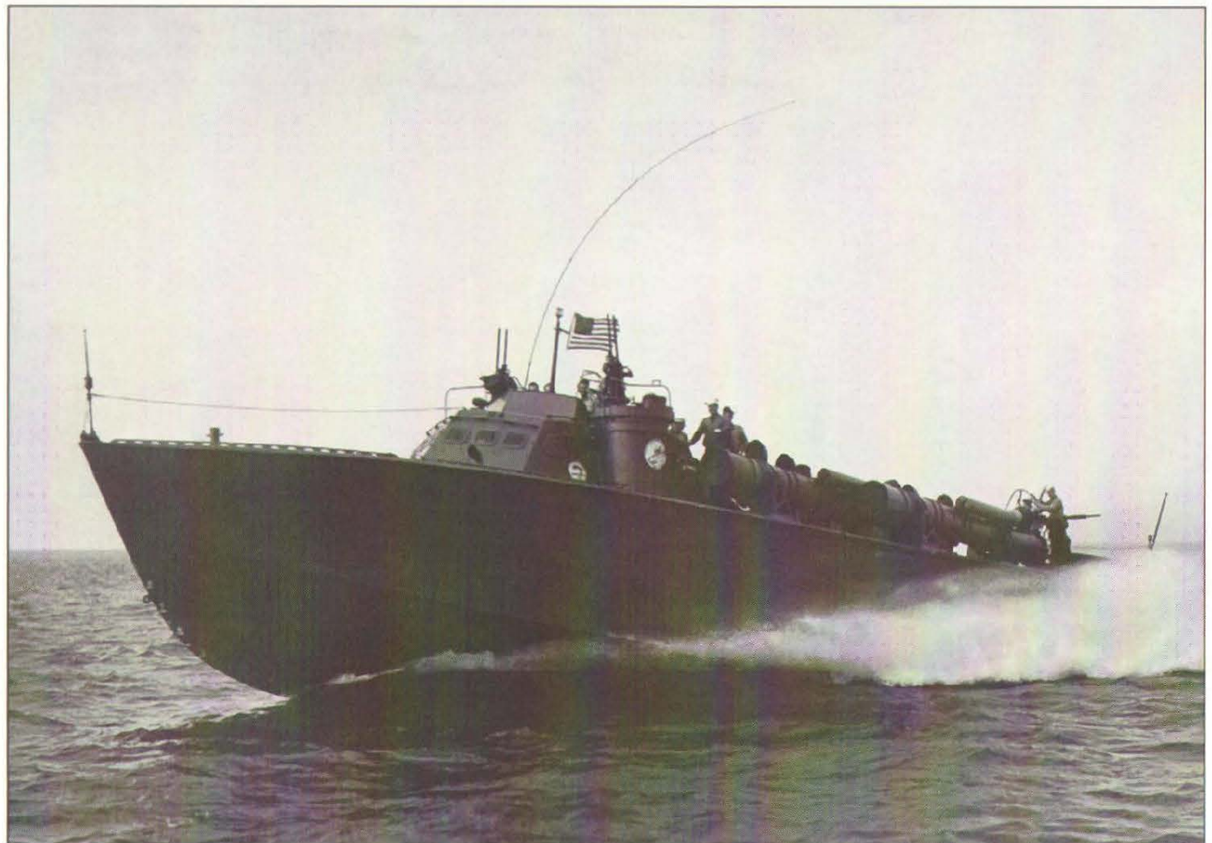
PT-77 crosses the wake of the Higgins 78-foot PT boat in the foreground during exercises off Panama in January 1943. Three crewmen, including two wearing M1 helmets, are serving the 20mm cannon, which is raised to maximum elevation. (National Archives)

A Higgins 78-foot PT boat exhibits features of a mid-to-late-war boat, including an early-style radar mast with radome, a cannon—probably 20mm—on the foredeck, a 20mm cannon amidships, and a 40mm Bofors gun on the after deck. Two Mk. 13 torpedoes are in drop racks. The boat is painted in a Measure 31 camouflage scheme. (Stan Piet)

An early Higgins boat operating in North Pacific waters is armed with two torpedo tubes and two depth charge racks per side. Between the two depth charges is an ammunition box for the 20mm cannon on the fantail. Exhaust fumes from the submerged exhaust ports are churning up water beside the boat. (Stan Piet)

A gunner mans the starboard twin .50-caliber machine guns of a Higgins PT boat during an official visit by the Colombian war minister in Panama Bay on 25 January 1943. Below the gun receivers is a flex tube for spent brass. (Navy History and Heritage Command)

PT-84 was photographed during a run on 8 December 1942, the day after it was placed in service. It served throughout the war with Squadron 13, seeing action from the Aleutians to New Guinea, Borneo, and the Philippines.



PT-78 of Squadron 13 made a port call at Kodiak during its 1943-1944 deployment to Alaska. Following its tour of duty in Panama, the squadron was shipped to Seattle, from which PT-78 proceeded with a four-boat contingent under their own power to Alaska, a voyage lasting from 21 March to 1 May 1943.

Also photographed at dock in Kodiak was PT-84 of Squadron 13. Both PT-84 and PT-78 were virtually in the same configurations as when they were commissioned, with torpedo tubes, stock armaments, and no radar masts. Covers have been installed over the windows of the chart house to eliminate their glare.

PT-77 of Squadron 13 was photographed at Puget Sound Navy Yard, Bremerton, Washington, on 3 July 1944, after a tour of duty in the Aleutians and before being transferred to the Southwest Pacific. The boat had just undergone a modification program at Bremerton.

The modifications to PT-77 included the addition of the radar mast, the 40mm Bofors gun on the fantail, the 20mm gun to the foredeck, and two tripod gun mounts amidships. The torpedo tubes gave way to drop racks for Mk. 13 torpedoes, two on each side of the boat amidships. (National Archives)

The amidships guns, locked at maximum elevation, are under covers. The box with the perforations on the deck to the rear of the torpedo is the engine room vent box. An A-frame bipod acts as a travel lock for the 40mm gun barrel. (National Archives)

The smoke discharger is still in its original position on the port side of the PT-77's stern. The canvas gun covers were often quite intricate in their construction. The extension on the 40mm gun cover accommodates the gun's auto loader. (National Archives)

PT-77, a 78-foot Higgins Patrol Torpedo (PT) boat, speeds along on a high speed run during training maneuvers off the Panama Canal Zone in 1943. Later, faulty identification led to the loss of the boat in a "friendly fire" incident off Talin Point, Batangas Province, Luzon, the Philippines, on 1 February 1945. The Higgins boat featured twin .50-caliber machine gun turrets on either side of the bridge and a 20mm cannon on the stern. The torpedo tubes on this series of boat were mounted in a staggered arrangement.

Details of the stern and afterdeck of PT-77 after its modifications at Bremerton are visible. The radar mast could be lowered, and an arc-shaped rest for it was installed to the front of the engine room hatch. There is a tripod-mounted stern and trailing light, and chains brace the two stern stanchions. (National Archives)

The 20mm cannon on the foredeck of PT-77 is fitted with a weather cover. To the front of the chart house are two 20mm ammunition lockers. As the war progressed, it was common practice to paint over or cover the windows of the chart house to eliminate glare that could disclose the boat's location. (National Archives)

The boat's number, 77, is painted in white on the side of the turret and on the life preserver. The two amidships gun mounts and canvas covers are visible. The radar mast has a slight forward tilt. (National Archives)

After this series of photos was taken at Bremerton, the PT-77 served in Philippine waters with Squadron 13. During a patrol against Japanese kamikaze boats off Talin Point, Batangas Province, Luzon, on 1 February 1945, two U.S. warships mistakenly fired on the boat and destroyed it. (National Archives)

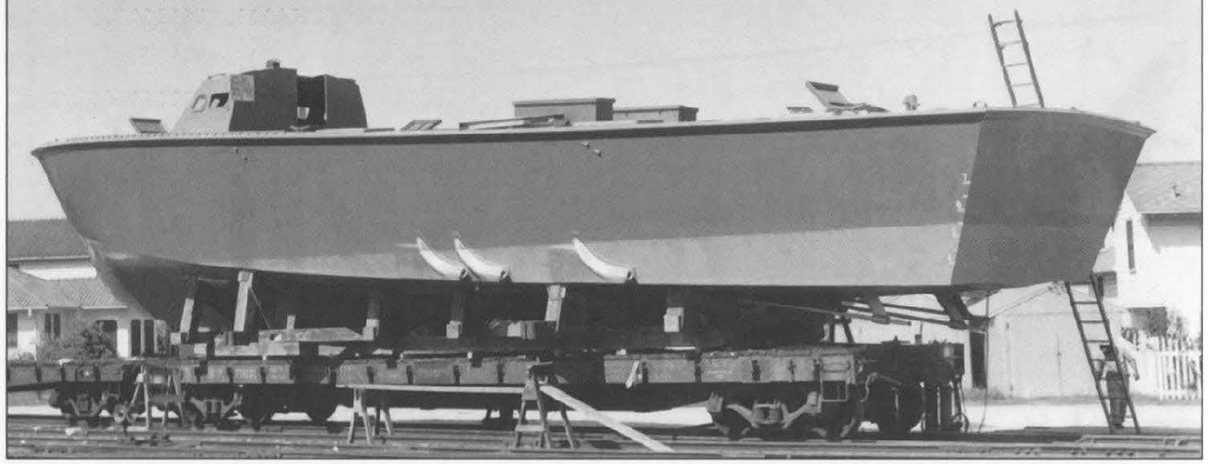
As a measure to deceive the Japanese occupiers of Kiska during operations to retake that island on 15 August 1943, five Higgins PT boats of Squadron 13 were outfitted with plywood silhouettes along the gunwales to give them the appearance of being troop-laden landing craft. These five boats, including PTs 82 (background) and 81 (foreground), carried out a feint at Vega Point on Kiska Island.

Two unidentified Higgins PT boats are seen in Aleutian waters. Details of the torpedo tubes and compressed air flasks of the boat to the right are visible. On the deck to the rear of the open hatch to the engine room is the engine compartment blower box. (National Archives)

Higgins 78-foot PT boats are docked at the PT boat base at Finger Bay, Adak, in the Aleutians. The boats in the first row have radar masts and 20mm cannons on the foredecks. The large vessel in the background is the USS *Tatoosh* (YAG-1), which served as the PT boats' tender. (National Archives)

Another view of Higgins PT boats from Squadron 16 at Adak discloses an insignia on the turret of the near boat featuring a 10-gallon cowboy hat. This was the insignia of Lieutenant Boone's PT boat. The forward torpedo tube has been removed from that boat. (National Archives)

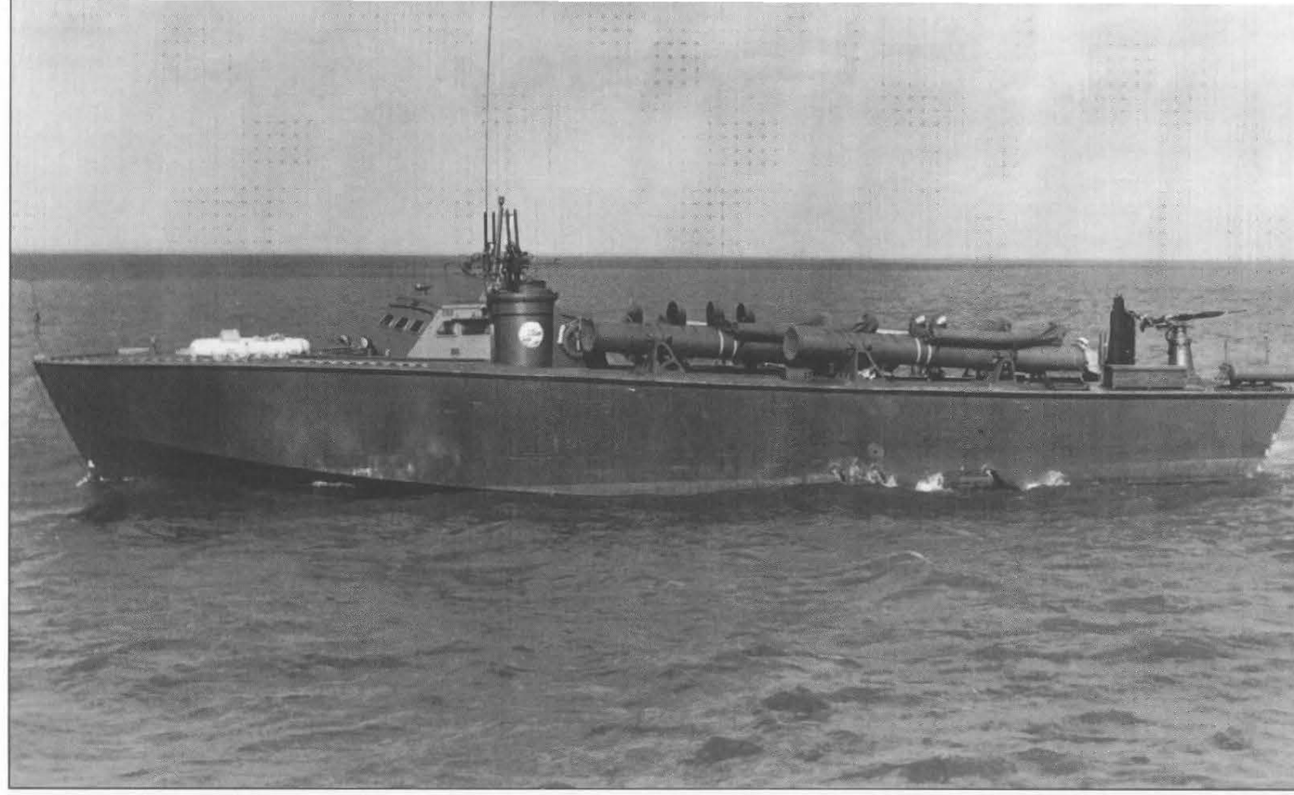
Crewmen on PT-71, the number-one Higgins 78-foot PT boat, set up a trio of rockets. Evidently this was an experimental mount, incorporating aircraft rockets on rail launchers attached to a framework mounted to the area normally occupied by the forward foundation of the forward torpedo tube.



The production run of the second batch of Higgins 78-foot PT boats, the PT-197-254 class, lasted one year. The first hull was laid on 23 June 1942, and the last boat, PT-254, was finished 16 June 1943. As produced, this class resembled the initial Higgins boat class, PTs-71-94, although there would later be modifications and upgrades, such as the addition of radar and 40mm Bofors guns. Here, PT-201, the fifth boat in the class, rides a flatcar prior to launch and completion. Only the chart house and two storage boxes have been fitted on the deck. In front of the chart house is the open crew quarters hatch. Three port engine exhausts are just below the waterline. The white numbers were for visually gauging the boat's draft, which was 5 feet 3 inches. (National Archives)

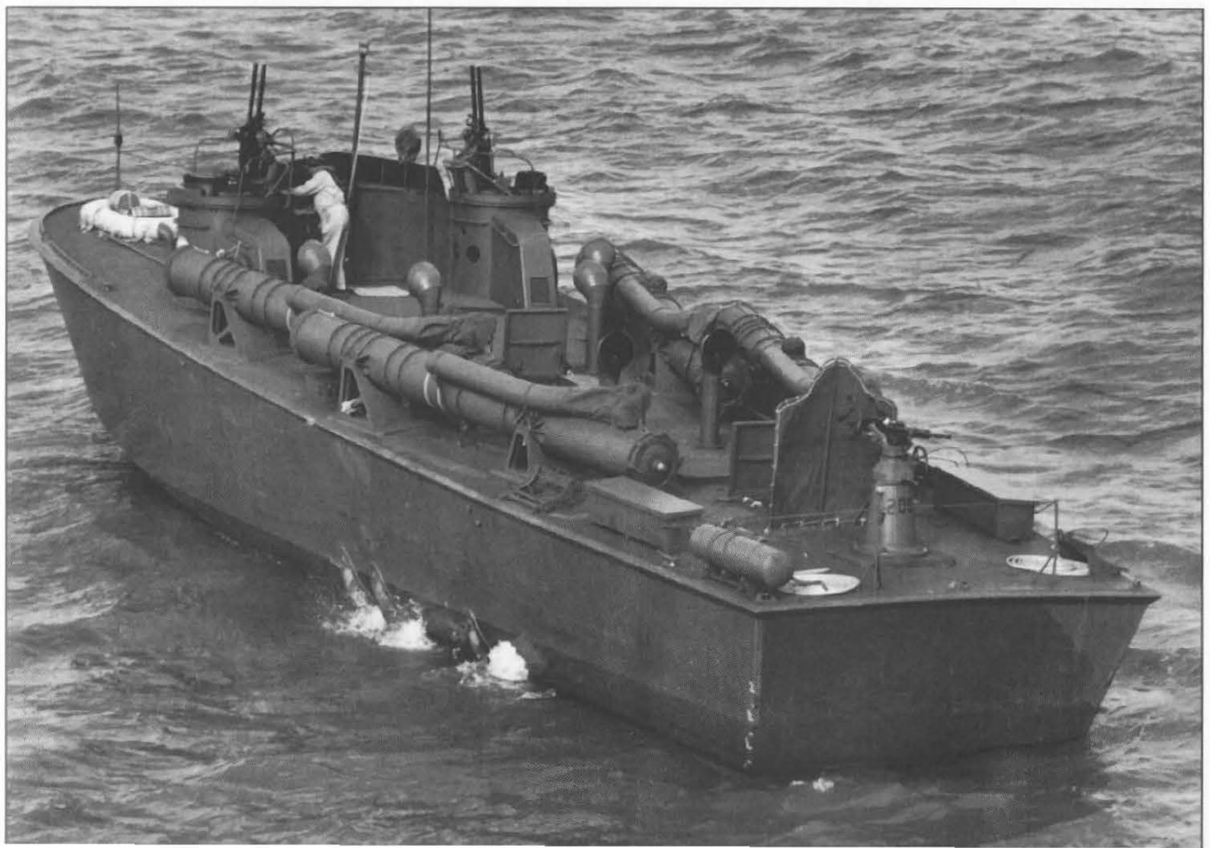
PT-200 knifes through the water on a test run in late January 1943. It served in Squadron 4, the PT-boat training unit at Melville, Rhode Island. The radar mast had not yet been introduced into production; instead, aft of the bridge is a stubby mast with a navigation light at the top. A whip antenna is to starboard and a siren is on the front of the chart house. Stationary torpedo tubes were set at 12 degrees from the centerline of the Higgins boats. (Elco 80-foot boats' torpedo tubes were mounted on turntables and swung outward for launch.) PT-200 sank on 22 February 1944, after a collision off Newport, Rhode Island.

PT-200 shows off a different aspect during its test run on 26 January 1943. In the corner between the side of the chart house and the turret is the port navigation light. The bow navigation light is built into the jackstaff. (National Archives)

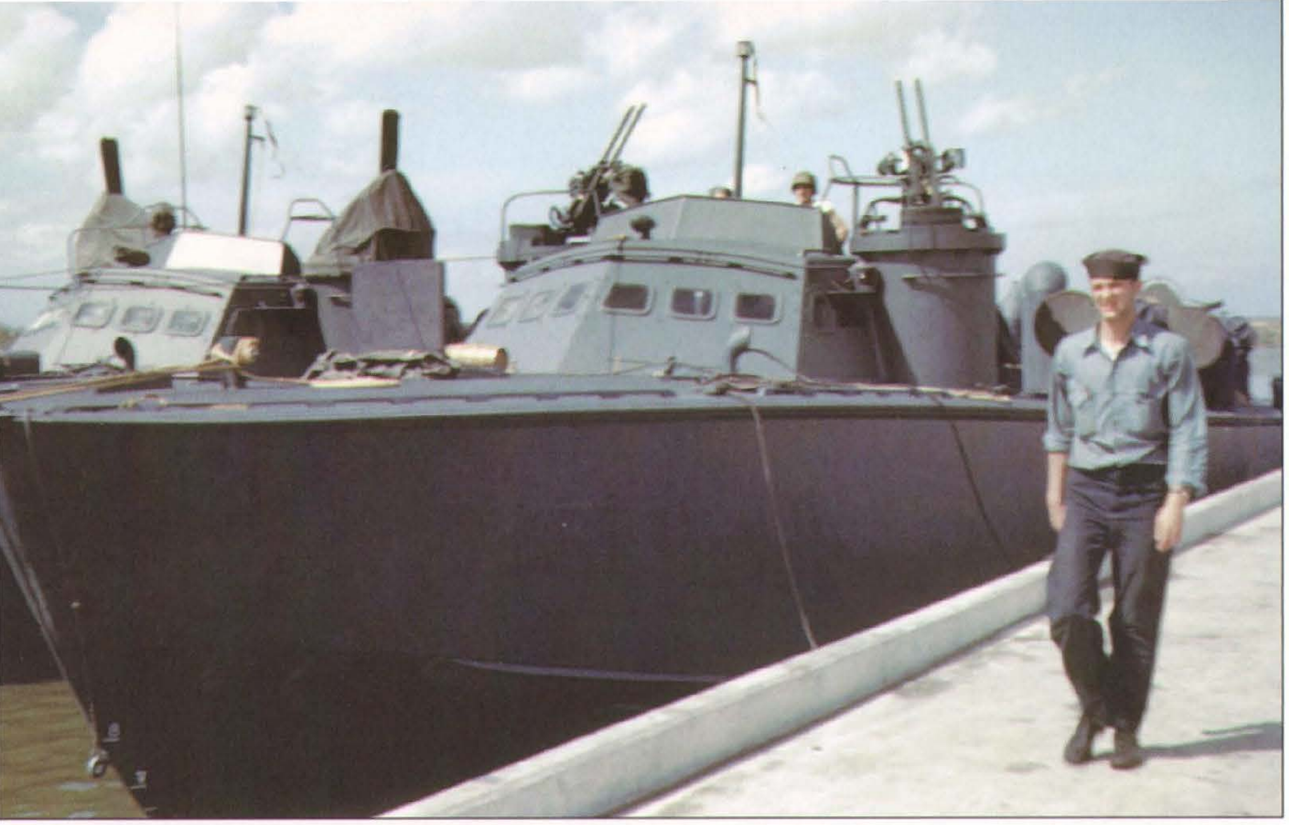


PT-200 was delivered with two sets of twin .50-caliber machine guns, four torpedo tubes, and a 20mm Oerlikon cannon on the fantail. Later, boats in the PT-197-254 class would be retrofitted with Mk. 13 torpedoes on drop racks, radar masts, 40mm guns, and other armaments. (National Archives)

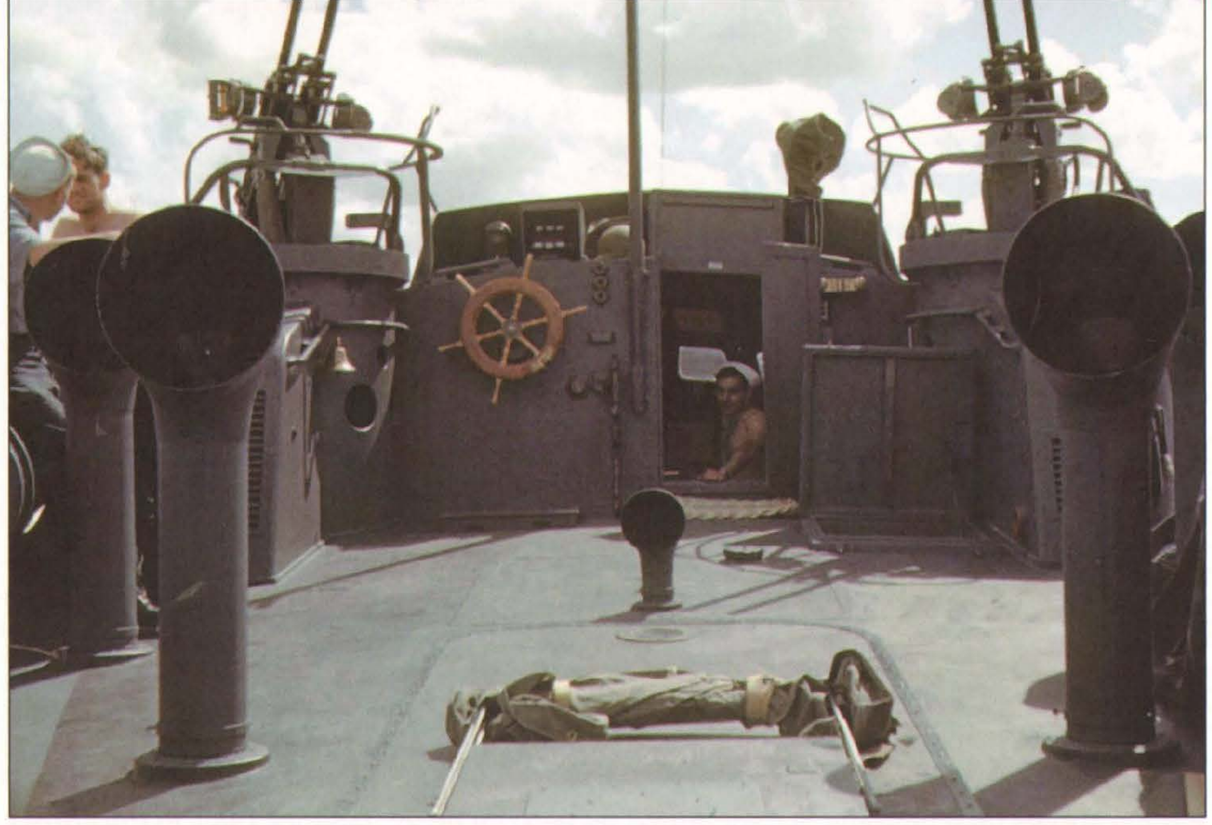
On the port side of PT-200's deck at the stern is the smoke generator. The boat's number is painted in black on the pedestal of the 20mm gun. Lashed to the depression rail immediately forward of the 20mm gun mount is a canvas windscreen. (National Archives)



In a bow-on view of PT-200, grab rails are visible along the top front of the chart house and on the plywood turrets. Toe rails are mounted on the outer edges of the foredeck. Canvas covers are stretched over the fronts of the torpedo tubes. (National Archives)



Two Higgins 78-foot PT boats from Squadron 16, including PT-221 at left, were photographed dockside at New Orleans shortly after their commissioning. The weather covers have been removed from the machine gun turrets on the boat to the right, while they remain in place on the other boat.



In a view of the bridge of PT-221 from the rear, the helm, base of the mast, and door into the chart house are visible. The open hatch on the deck to the right leads down into the wardroom. The boat's bell is to the left of the bridge, and in the center foreground is a collapsible awning for use when the engine room hatch was open.

Alfred G. Abeckerle, a first engineer in Squadron 16, photographed the aft ends of two Higgins PT boats of his squadron at a dock in New Orleans. Weather covers are fitted over the turrets, and a U.S. flag flies from the stern of the boat on the left.

While Squadron 16 was operating in Alaskan waters, a huge wave hit one of its Higgins 78-foot PT boats and tore apart the front of the chart house and bridge. The boat was photographed during repairs at the submarine base on Kodiak Island.

Lieutenant (j.g.) Robert Roth of St. Louis, Missouri, was photographed at the helm of a Squadron 16 Higgins PT boat in Alaska. During the war, Roth would receive the Silver Star. To the left are the searchlight and the BN antenna of the IFF system.

PT-224 of Squadron 16 was the last boat when deployed in columns, so naturally it was named "Tail End." Paul Stevens rendered the painting on front of the chart room. The ammunition boxes and the vertical pipe (a water receptacle for cooling the bow 20mm gun barrel if it jammed) were part of a modification program.

A Higgins boat from Squadron 16 departs from Attu Island, Alaska, on a patrol. Weather covers are over the turrets, and canvas covers are draped over the rears of the torpedo tubes and compressed air flasks. Depth charges are in release racks along the after deck, two per side. PT boats provided one of the key lines of defense against Japanese incursions in the Aleutians.

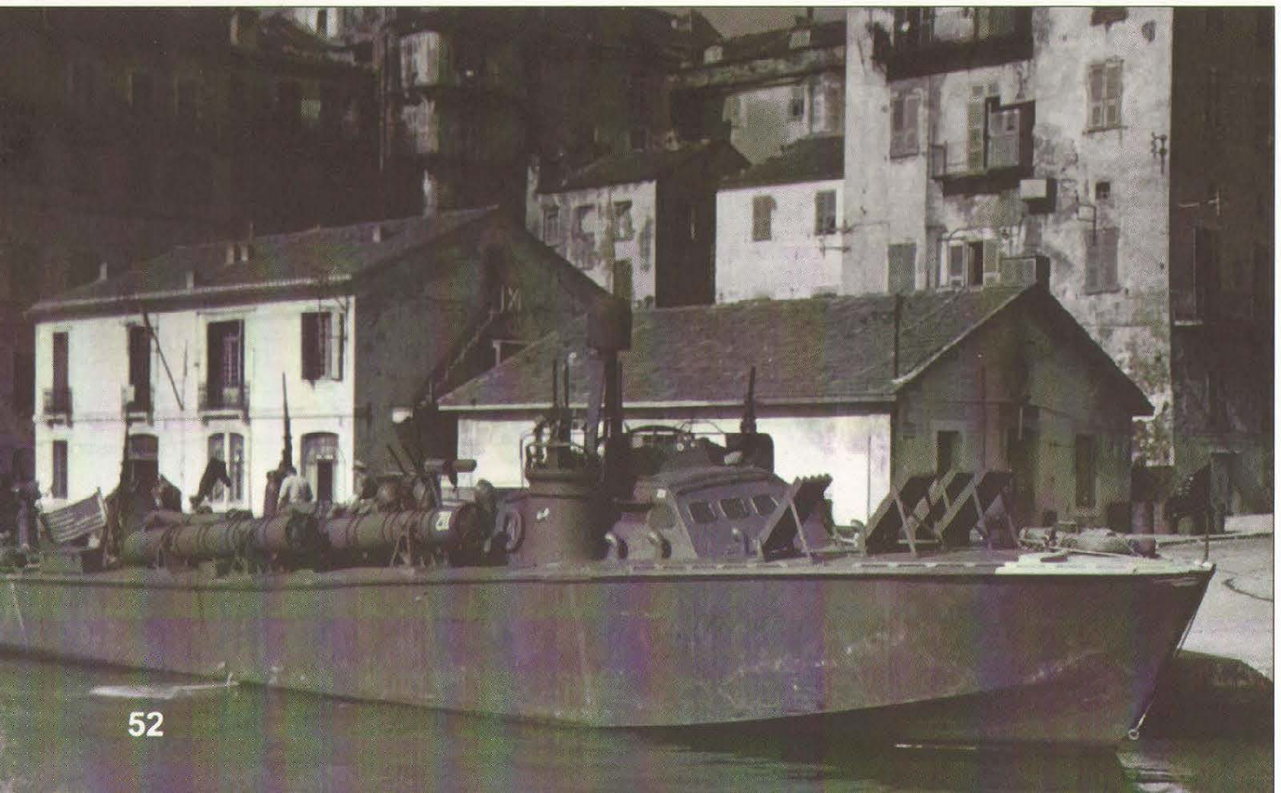
Tommy Allison of Squadron 16 mans the starboard .50-caliber machine guns at a dock in the Aleutians. He is wearing a life jacket, M1 helmet, and leather gloves. A mix of ammunition with one tracer round (red tip) followed by two armor-piercing rounds (black tips) is loaded into the guns.

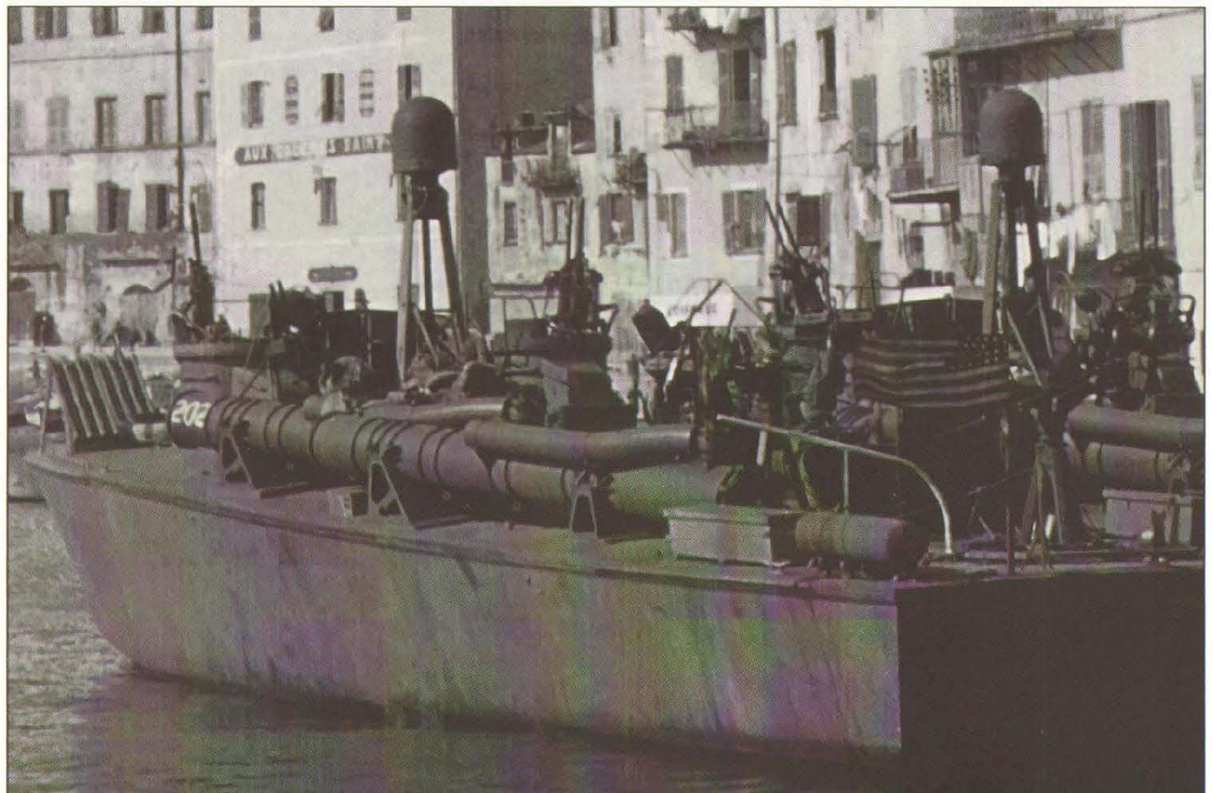
Torpedoman Bob Carlson performs adjustments on a Mk. 13 torpedo on a dolly. Marked on the side of the dolly is "Base 13," a reference to PT Boat Base 13 at Casco Cove in Massacre Bay, Attu, in the Aleutians. To the side is the Higgins PT boat of Lieutenant Boone, featuring the cowboy hat insignia.

This Higgins 78-foot PT boat on duty in the Mediterranean sported a zebra-stripe camouflage scheme. The black and white stripes were considerably wider than those observed on Elco PT boats. This would have made the job of painting the stripes much easier. On the chart house roof is a radio direction-finding antenna. (National Archives)

Photographed at the PT boat base at Bastia, Corsica, in February 1944, PT-211 of Squadron 15, commanded by Lt. (j.g.) Page H. Tulloch, boasted several modifications, including an early-model radar mast and four sets of rocket launchers, each firing four rockets. Mk. 50 rocket launchers would be mounted on some later Higgins PT boats. (National Archives)

PT-202, photographed in port at Bastia, Corsica, also was equipped with the forward rocket launchers. Squadron 15 experimented with the rocket launchers as a means of combating the German F-lighters, flak boats active in the Mediterranean, but only used them twice, once in an attack mounted by PTs 202 and 211 on the night of 19-20 February 1944. (National Archives)





PT-244 (right) and PT-115, an Elco 80-foot PT boat, undergo maintenance in dry dock. PT-244 exhibits several post-production modifications, including the radar mast and a tripod mount instead of pedestal mount for the 20mm gun on the fantail. This boat served with Squadron 19 in the South Pacific before being transferred to Squadron 23 in April 1944, serving in the South Pacific and Southwest Pacific areas.

Photographed from another PT boat, PT-252 exhibits a number of upgrades over the early boats in the PT-197-254 class, including a radome atop a new mast, two 20mm Oerlikon cannons amidships, and a 37mm cannon, a mortar, and a machine gun mount on the foredeck. Mark 13 torpedoes on drop racks have replaced the earlier torpedo tubes.

PT-229 to the left picks up infantrymen at Taboga Island off Panama in 1943. PT-229 was commissioned into Squadron 17 on 29 March 1943, and saw action in the Philippines later in the war. Because of their shallow drafts, PT boats were sometimes put to use ferrying troops to and from beachheads.

Also assigned to Squadron 17, PT-234 displays a two-color camouflage scheme as well as numerous modifications. In addition to the early-model radar mast, a 40mm Bofors gun has been mounted on the fantail. Two Mk. 13 torpedoes are in their racks (the one on the left is covered by a tarp), and a single depth charge is to the rear of each torpedo.

PT-221 is offloaded from a vessel at Manus Island in the Admiralty Islands, New Guinea, after transfer via ship from the Aleutians along with the rest of Motor Torpedo Boat Squadron 16. On the way from the Aleutians to the Southwest Pacific, the boat had stopped off in Washington State for modification. A 20mm cannon and two ammunition boxes had been mounted on the foredeck, an early-model radar mast (shown lowered) had been installed aft of the bridge, and a 40mm Bofors gun replaced the 20mm cannon on the fantail. The bulky torpedo tubes had been replaced by racks for Mk. 13 torpedoes. Once the PT boat was lowered into the water, the boat simply floated free of the cradle, started its engines, and was on its way. From Manus, the squadron proceeded to Mios Woende in the Netherlands East Indies (modern Indonesia) in September 1944.

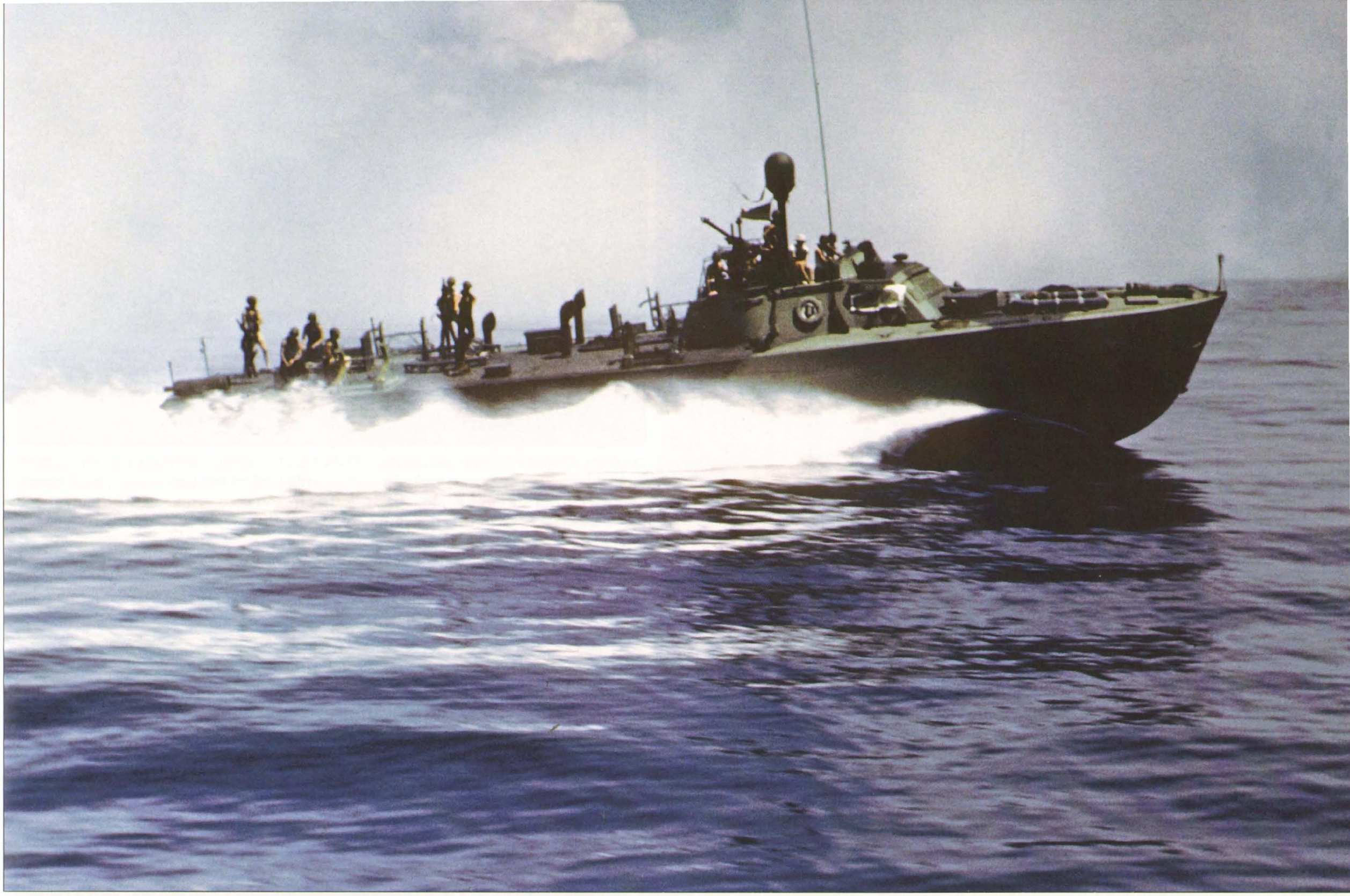
A sailor stands next to the well-covered 40mm Bofors gun on the deck of a Higgins PT boat during transit to the Southwest Pacific aboard a transport ship. A conical flash suppressor is fitted over the muzzle of the gun, and the speed ring sights are protruding from under the canvas cover.

Photographed dockside with two other Higgins 78-foot boats, PT-286 wears a placard announcing that its construction was sponsored by the war bonds and stamps purchases of the citizens of Montgomery County, Illinois. It was part of the PT-265-313 class, the first hull of which was laid 23 November 1942, and the last boat of which was completed 31 January 1944. National Archives

PT-309, "Oh Frankie," entered the service on 26 January 1944 and served with Squadron 22 in the Mediterranean. Among its missions was the support of the Allied invasion of the Italian island of Elba on 16-17 June 1944. It is equipped with an early-model radar mast and a 20mm cannon on the foredeck. This boat survived the war, and is today on display at the National Museum of the Pacific War, Fredericksburg, Texas.

A passing aircraft captured this view of PT-285 of Squadron 23 during its shakedown cruise off the entrance to the Miami Yacht Harbor, Florida, showing details of its deck and equipment arrangements. The gunners, including the one on the 20mm cannon in front of the chart house, are tracking the passing aircraft with their guns.

PT-453 served briefly with Squadron 30 in early 1944 before being transferred to Squadron 31, which served in the Solomon Islands, Palau, the Philippines, and Okinawa. This boat was an early example of the Higgins PT-450-485 class, the first keel of which was laid 24 May 1943, and the last boat of which was completed 29 August 1944. The boat has a two-color camouflage scheme. Its weapons complement includes four racks for Mk. 13 torpedoes, two .50-caliber machine gun turrets, and a 20mm cannon each in the amidships and fantail positions. All of the crewmen are shirtless, with some wearing trunks, and all have on M1 helmets. (Stan Piet)

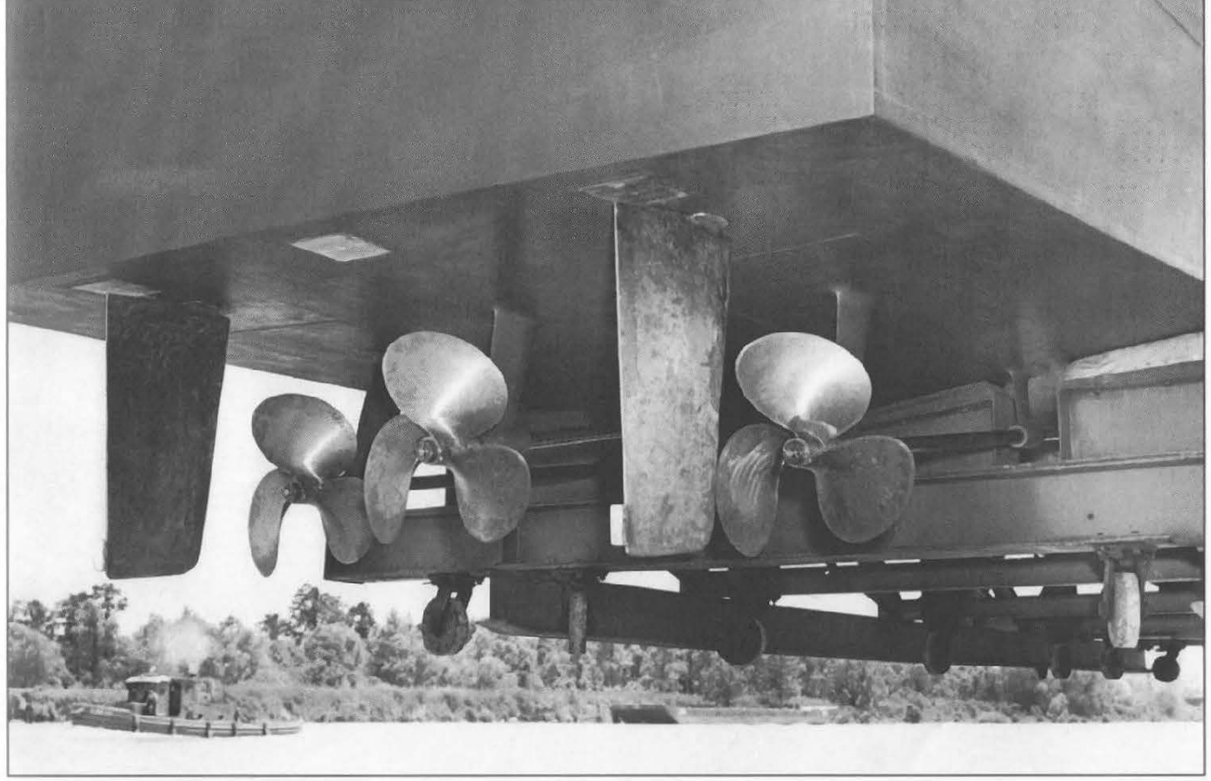


A Higgins boat, probably PT-453 of Squadron 30, cuts through the waves at high speed. A large stowage box has been mounted on the foredeck to the starboard side of the chart house. An early-style collapsible radar mast with radome is aft of the bridge. With no torpedoes mounted, the amidships deck of the mid-production Higgins PT boat looks open and uncluttered compared with the same area of the Elco 80-foot PT boats that were crammed with a day cabin, after turret, and engine room hatch/ventilator. Protruding from the PT-453's deck amidships are four adjustable vents that supply air to the engine room. The machine gun turrets have been shifted a bit aft of their former locations next to the bridge. (Stan Piet)

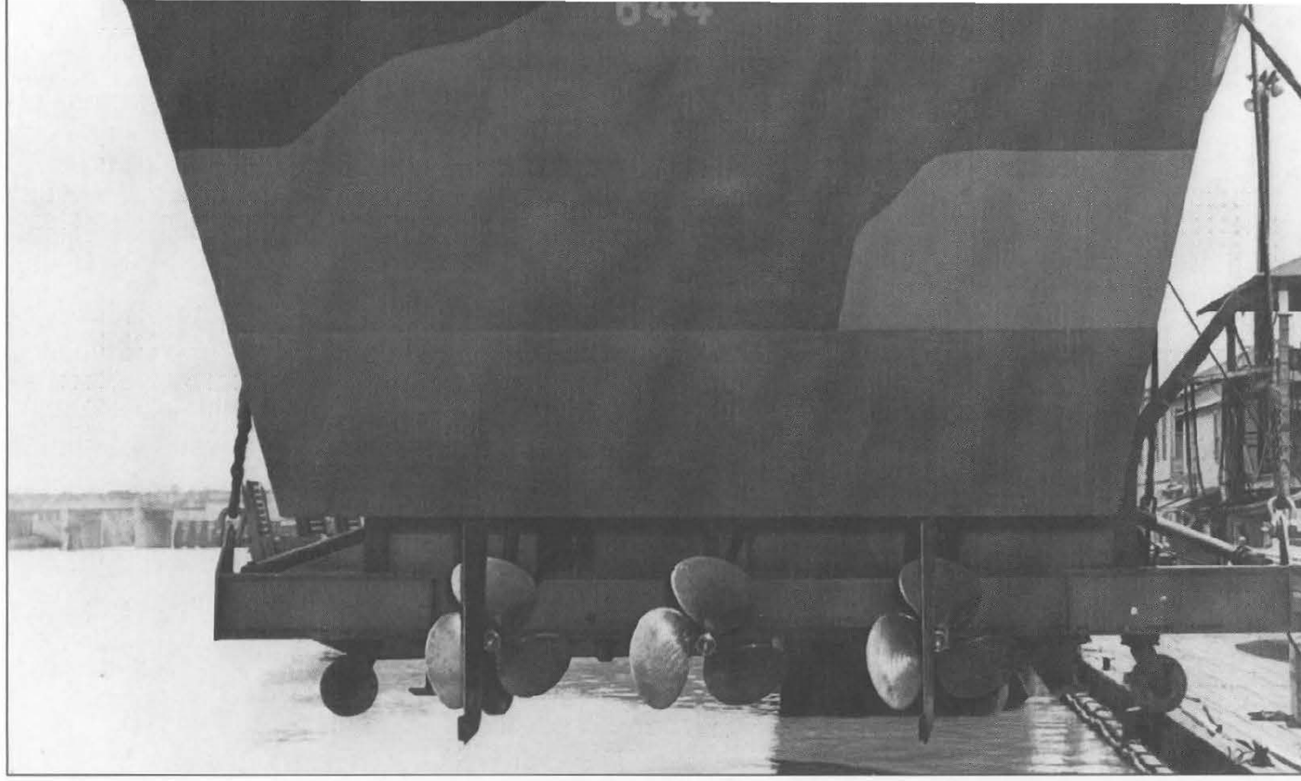
The PT-625-660 class of Higgins 78-foot boats was in production from 17 May 1944, to 27 August 1946. On this class of boat, the windows were eliminated from the front of the charthouse. All but the last four boats in the class were exported to the Soviet Union. Photographed in the United States, PT-631 is equipped with a 37mm cannon and two Mk. 50 rocket launchers on the foredeck and a late-model radar mast.

Looking aft from behind the bridge, PT-631 had a 20mm Oerlikon cannon mounted amidships and a 40mm Bofors gun on the fantail, aft of the depression rail. Below the depression rail is a large ammunition box. The two aft deck vents found on early Higgins PT boats have been now omitted from the area to the sides of the 20mm cannon.

Looking forward from beside PT-631's chart house, the port Mk. 50 5-inch rocket launcher is seen in its stowed position, with the fronts of the tubes facing aft. The elevation crank is at the top of the launcher mount, and the ignition cable routes up through the deck. The 37mm cannon, magazine, mount, and foundation are also visible.

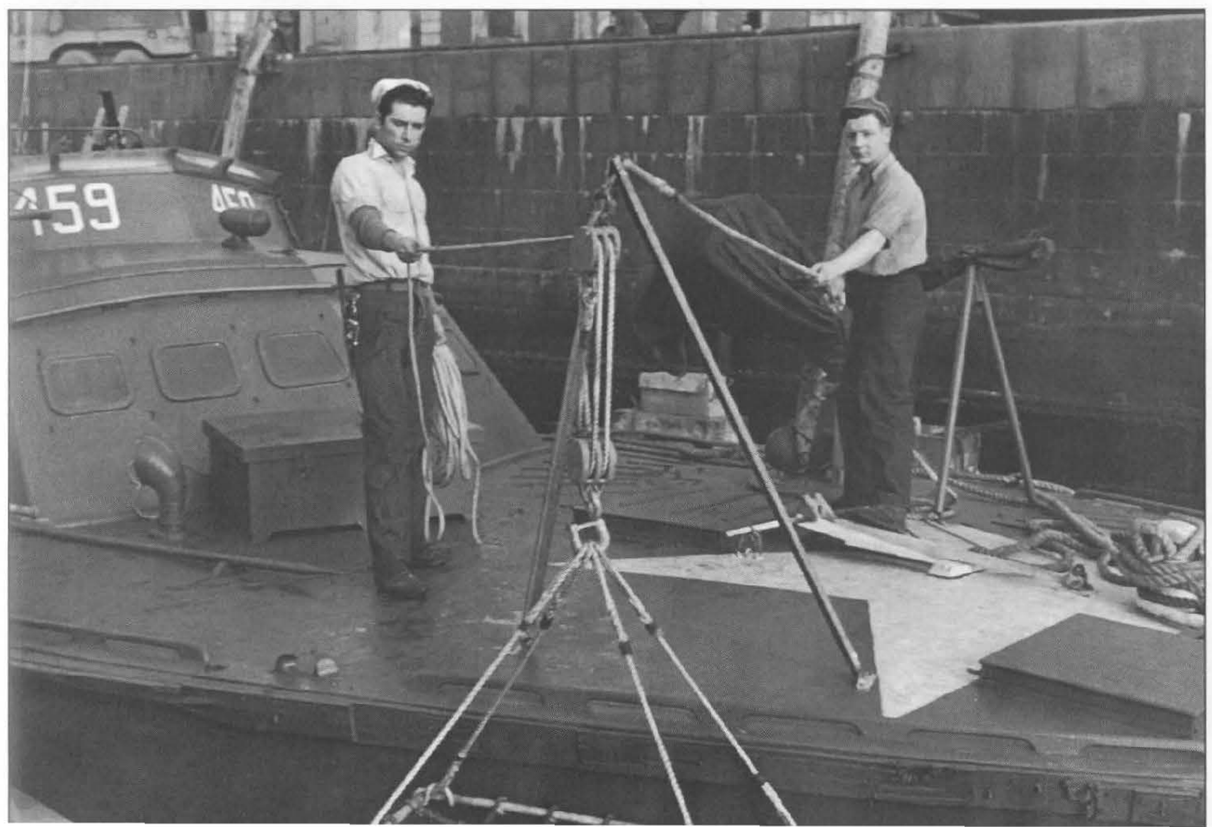


With a PT-625-660 class Higgins boat on a cradle, the three aluminum-manganese-bronze propellers and their shafts are visible. The government supplied the propellers, with each boat receiving three for installation and three for stowage as spares.



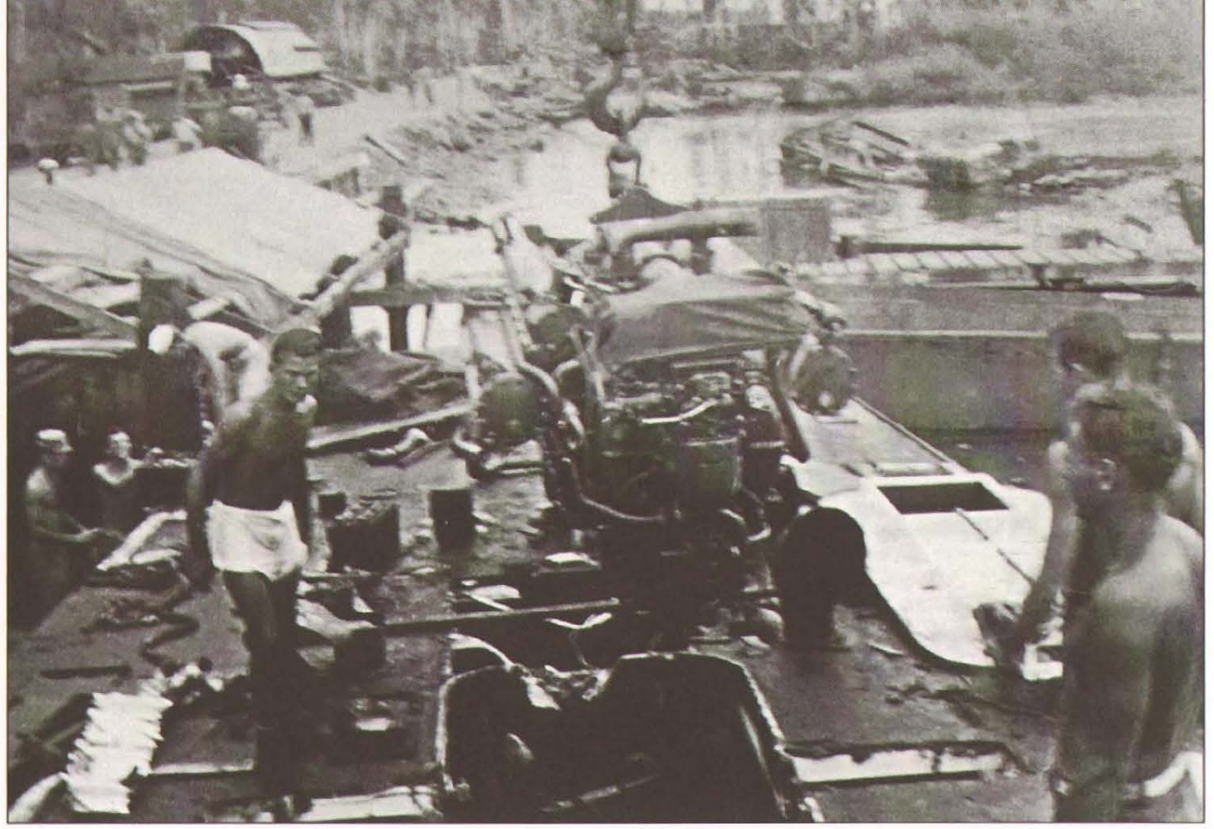
Higgins 78-foot PT boats had two rudders, while Elco 80-foot boats had three rudders. This boat, PT-644, was photographed at Higgins' New Orleans plant on 1 March 1945. A three-color camouflage scheme had been applied during production.

Two sailors on the foredeck of PT-459 demonstrate a rescue litter, hoisted by means of a rope-and-pulley apparatus attached to an A-frame secured to the deck. This boat served with Squadron 30 in the English Channel from late March 1944 to the end of the war. The large star painted on the foredeck provided positive identification for Allied pilots, who by this time controlled the air.



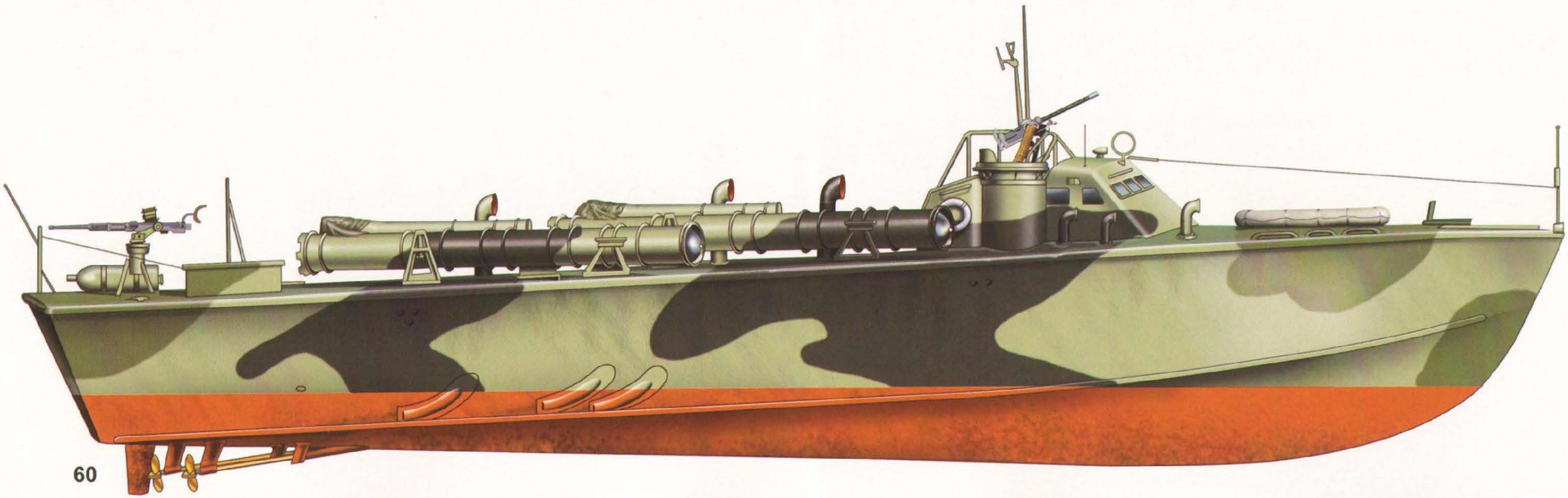
In September 1945, with the war over, several PT boats lie in port at Mangarin Bay, a PT boat base established in mid-December 1944 on Mindoro Island, the Philippines. The boat on the right is swamped, and next to it, PT-221 of Squadron 16 is not far behind. Faintly visible on PT-221's foredeck is a 40mm Bofors gun. That boat reportedly was one of only two Higgins boats to be fitted with a bow 40mm cannon.

Several Higgins PT boats, including PTs 285 and 241 of Squadron 23, in the foreground, lie in a harbor in the Philippines awaiting destruction several months after the end of World War II, the Navy having decided it wasn't worth retaining them. Both boats were stripped of their useful gear and then destroyed on 26 November 1945.



Prior to destroying their Higgins PT boats in the Southwest Pacific, crewmen are hoisting a Packard engine out of the engine compartment. The hook of the hoist is visible at the top center, with the engine just below it. All three engines were removed through the single engine compartment hatch at the lower center.

Operating from Bougainville Island, New Guinea, this 78-foot Higgins, belonging to MTB Squadron 23, is painted in camouflage Measure 31 and is well suited for operations close to shore and for vessels, such as the PTs, that stayed in small ports during the day and ventured out at night. One of this unit's boats (PT-283) was sunk by a coastal battery. PT-279 was involved in a collision with PT-282, but with the exception of PT-278, the remainder were burned on 26 November 1945 to dispose of them.



Huckins PT boats were introduced by Frank Huckins of the Huckins Yacht Company of Jacksonville, Florida, who designed PT-69 for the consideration of the U.S. Navy. The 72-foot boat powered by four Packard 1,200-horsepower engines competed against other PT boats in the "Plywood Derby" off New London, Connecticut, from 21 to 24 July 1941.

Huckins PT boats

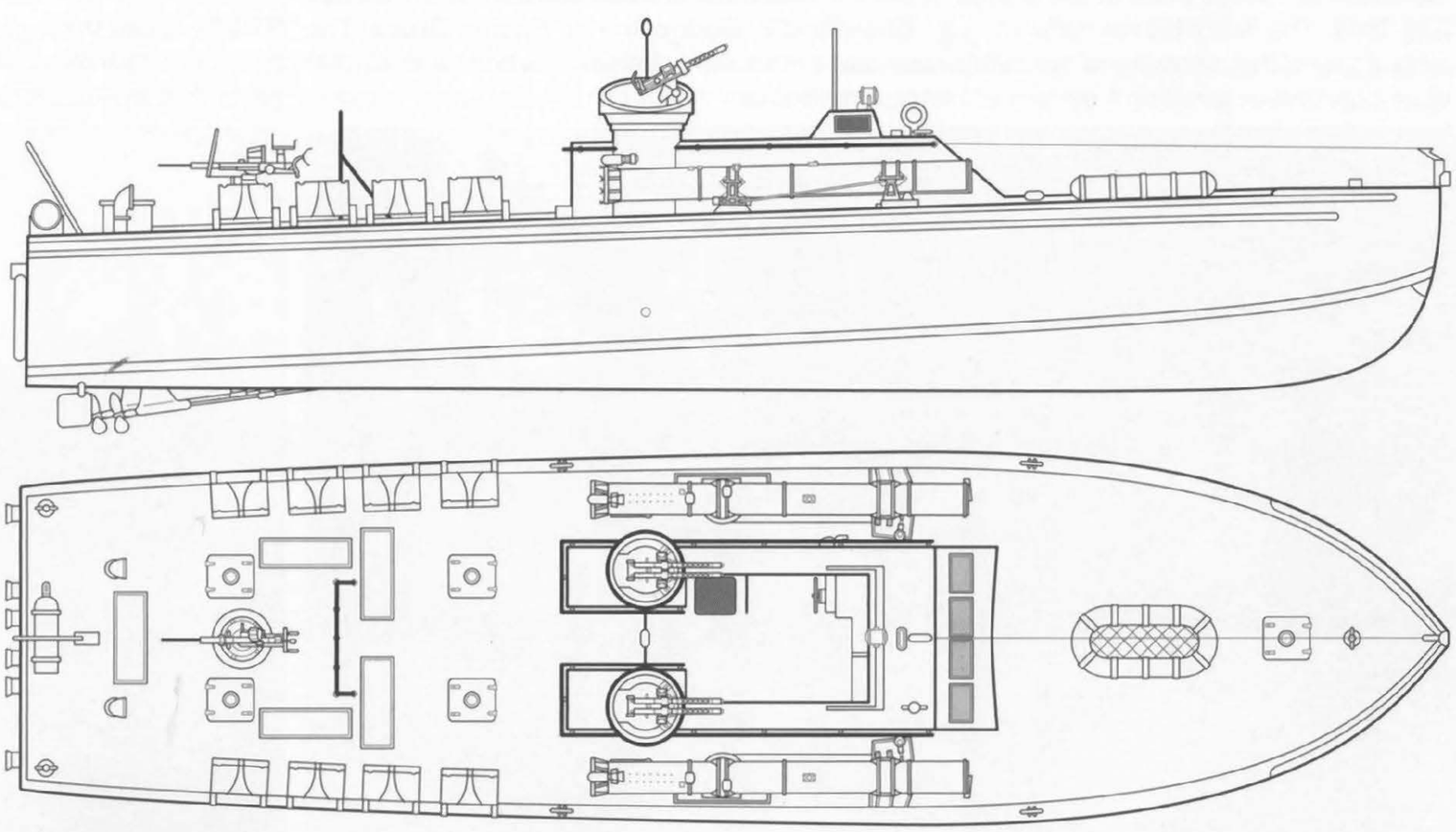
Frank Pembroke Huckins was a somewhat eccentric builder of luxury yachts in Jacksonville, Florida, who cast his eponymous firm's hat in the ring of PT boat competition. Using his own funds and government-supplied engines, the 70-foot PT-69 was constructed and took part in the "Plywood Derby" competitions of July and August 1941 competitions. The PT-69 proved itself to be the most maneuverable of the boats, as well as one of the fastest, but the trials caused structural damage to the vessel and it was forced to withdraw.

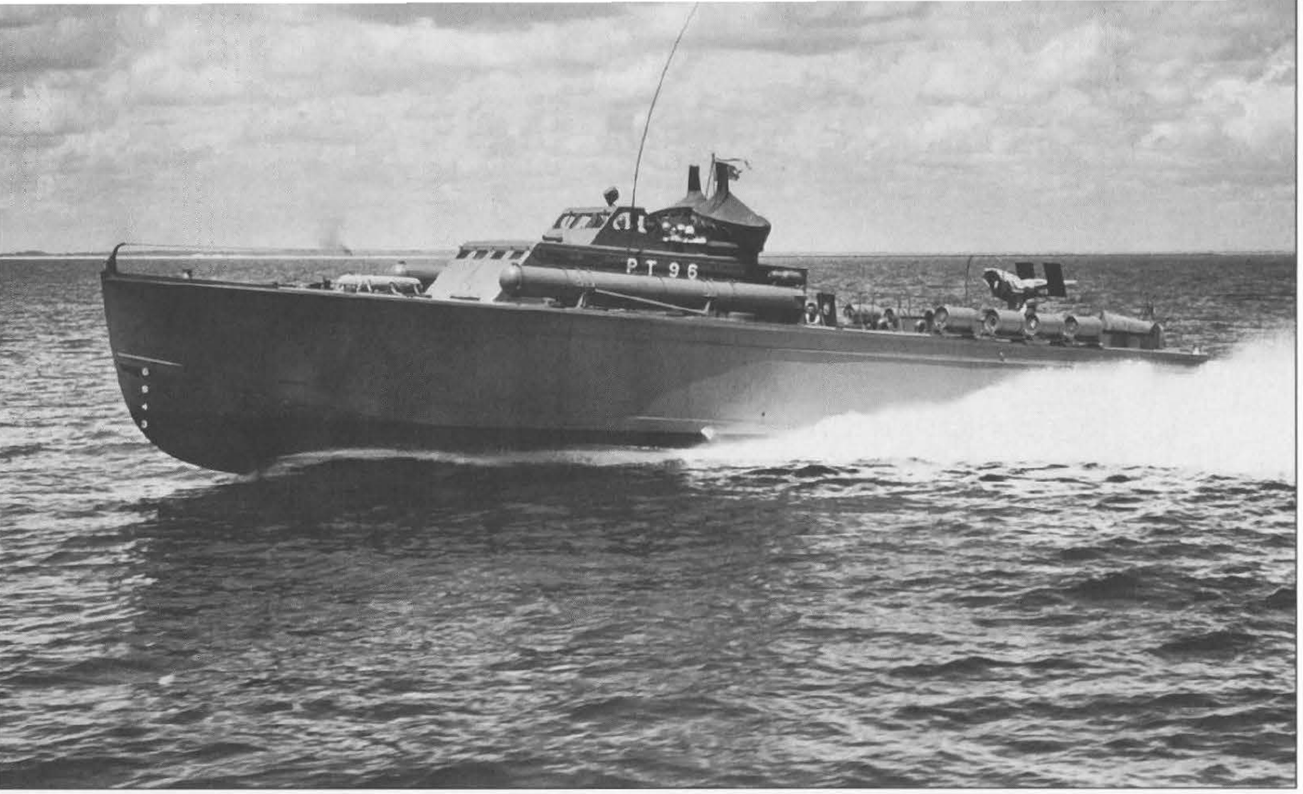
However, the PT-69's performance was such that when the Navy laid down new specifications for PT boats in October of 1941, Huckins was invited to contribute its bid and was awarded a contract to construct eight boats to the new specifications. These boats would be 78 feet long and powered by three, rather than four, Packard 4M-2500 engines.

The Huckins design differed most notably from the others by having a planing hull, rather than a deep V hull. Ultimately, none of Huckins' lightweight, low-profile boats would be used in combat. Boats PT-98 through 102 were assigned to RON 14 which had the dual functions of defending the Canal Zone and providing advanced training. PTs 255 through 264 were assigned to Squadron 26, and stationed in Hawaii, in defense of the islands. PTs 95 through 97 were assigned to the training squadron, RON 4, stationed in Melville, Rhode Island.

Specifications

Length	78 feet
Beam	19 feet 5 inches
Draft	5 feet
Displacement	34 tons
Powerplant	Three 1,200 hp Packard liquid-cooled engines
Armament	Two twin .50 caliber machine guns and four 21-inch torpedoes.
Speed	41 knots
Range	716 miles
Crew	2 Officers, 9 Enlisted men



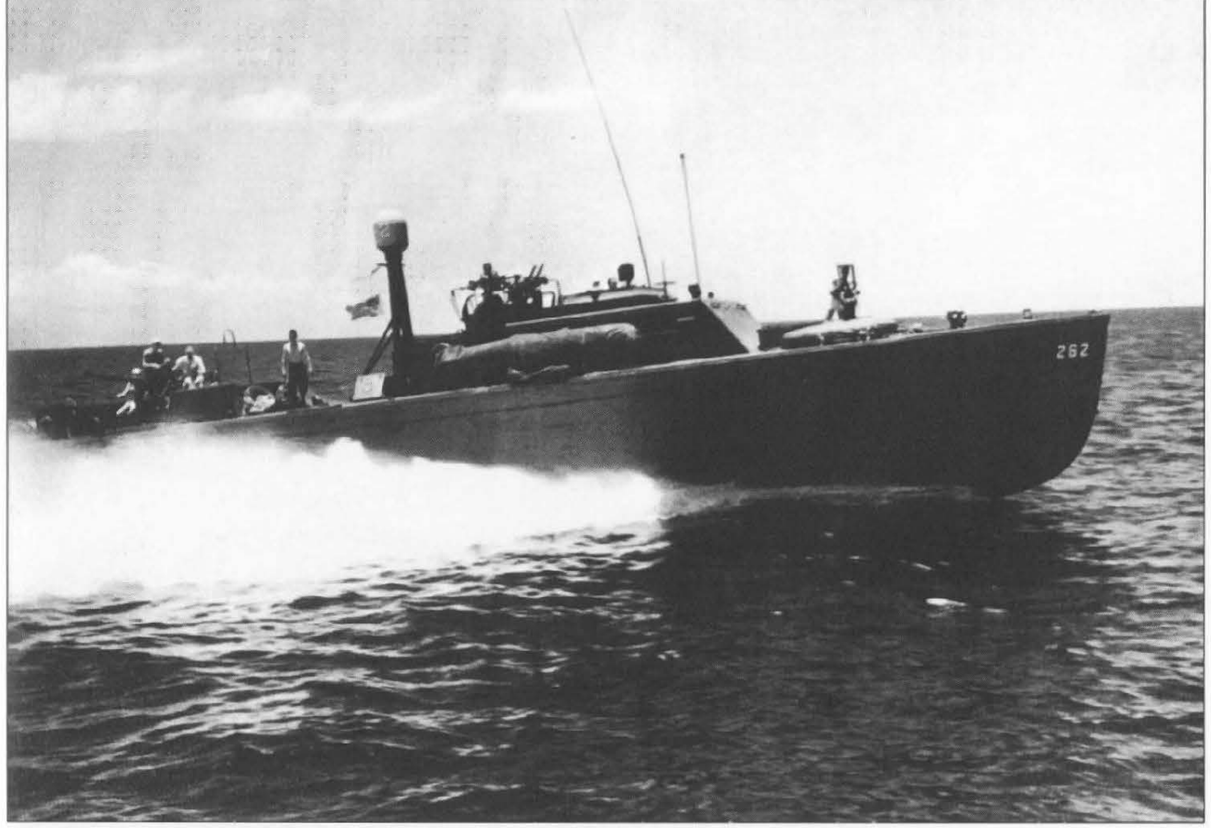


In addition to PT-69, Huckins produced 18 of its 78-foot PT boats in two lots for the U.S. Navy: PTs 95 to 102 and 255 to 264. These boats were not as successful as either the Higgins or Elco boats, and did not see combat.

The design of the bow lower hull of the Huckins boats is illustrated in this photo of PT-261 undergoing maintenance on a floating dry dock. Although the Huckins boats were not as fast as the Elco 80-foot PT boats, they were more maneuverable and had a tighter turning radius.

The crew of PT-262 pose in the bridge at the PT boat base at Pearl Harbor on Christmas Day 1944. The two officers were Lt. (j.g.) Cleveland E. Dodge and an Ensign Bruce. The slots around the coaming of the bridge are part of the wind deflector, which was similar in design to that used on Vosper motor torpedo boats.

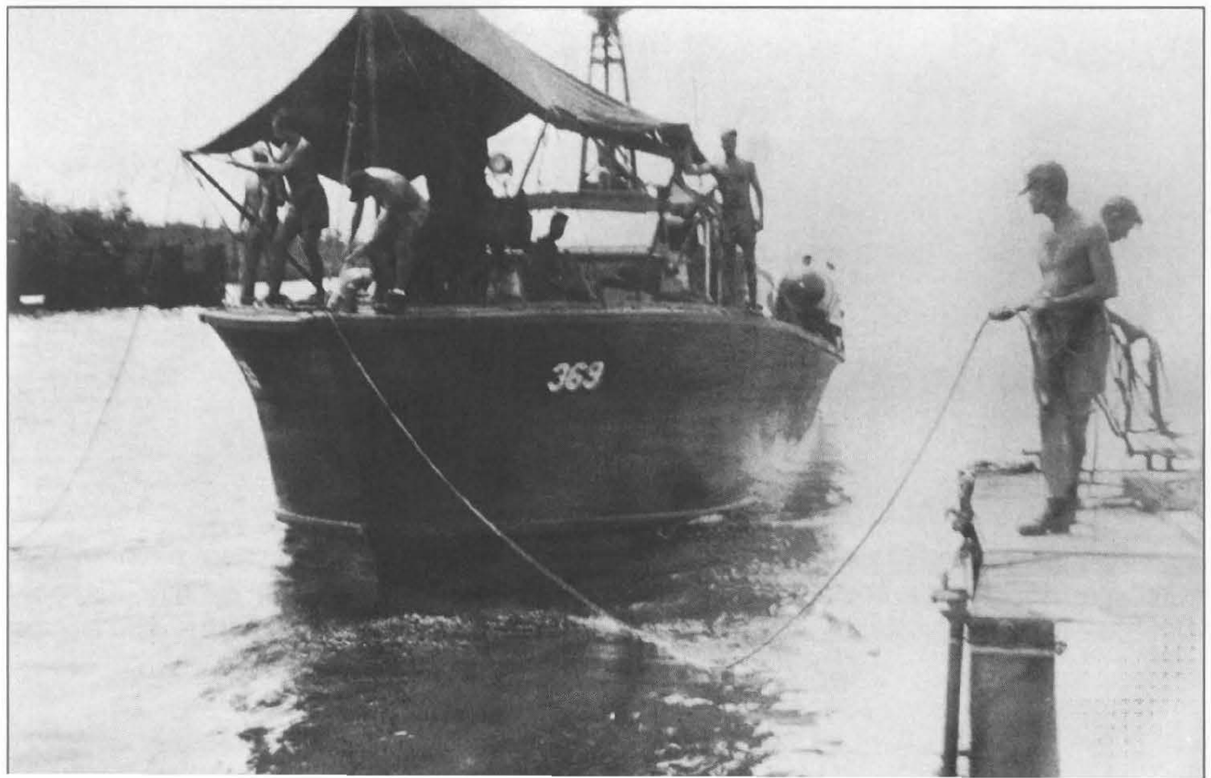
PT-262 slices through the waters off Hawaii in the spring of 1945 as part of the islands' defenses. The Mk. 13 torpedoes, 20mm cannon, and .50-caliber machine gun turrets are protected by waterproof coverings. The number 2 is painted on the radome.



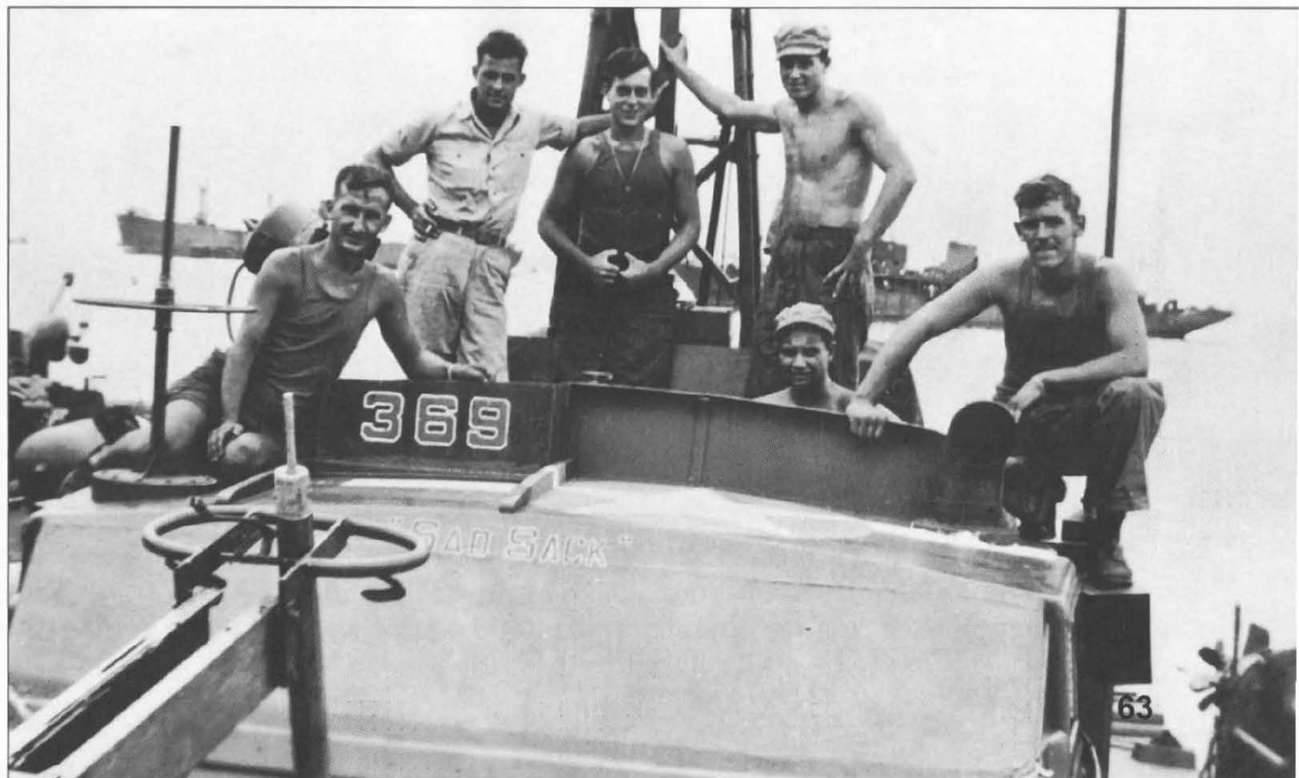
PT-262 is armed with Mk. 13 torpedoes, a 40mm Bofors gun on the after deck, two twin-.50-caliber machine gun turrets, and a 20mm gun on the foredeck. The vessel was part of the second lot of Huckins 78-foot boats and served with Squadron 26 in Hawaiian waters.

PT-262 crosses the wake of another boat during operations in Hawaiian waters. The 40mm Bofors gun and mount are under a waterproof cover, but the gun barrel and sights are sticking out of it. The barrel of the 20mm gun on the foredeck is secured with a line.

PT-369 "Sad Sack" was one of four boats, PTs 368 to 371, completed by the Canadian Power Boat Company, Montréal, in March and April 1943, and delivered to the U.S. Navy under Reverse Lend-Lease. This series was based on a Scott-Paine design for a 70' boat. All four boats served with Squadron 18 in the Southwest Pacific.



Members of the PT-369 crew pose on their boat. The commander, Ens. Frank Gore, is second from left. At the lower left is the rear of the receiver and the oval hand grip/ triggers of the Oldsmobile M4 37mm cannon. Above the cannon on the chart house is the BN antenna of the IFF system



After the end of World War II, most PT boats were considered no longer necessary. Since they were constructed of wood and could not be preserved without constant maintenance and precautions, the U.S. Navy destroyed them by the dozens, often by setting them on fire in harbors overseas. Today, fewer than 10 of these wooden wonders survive, and only the fading memories of their remaining crewmen and photos such as these are left to commemorate the contributions of these wooden boats and the men of steel who served aboard them.

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